

UNITED STATES DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

GEOLOGIC AND GRADE-TONNAGE INFORMATION ON  
VOLCANIC-HOSTED COPPER-ZINC-LEAD MASSIVE SULFIDE DEPOSITS

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This report is preliminary and has not  
been reviewed for conformity with  
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## INTRODUCTION

In the last 20 years, a great surge in the number of papers on stratabound Cu-Zn-Pb massive sulfide deposits associated with volcanic rocks has provided a substantial amount of information concerning grades, tonnages, ore types, mineralogies, host rocks, geologic setting, and new concepts on genesis. This information was compiled for over 500 deposits worldwide for the purpose of constructing grade-tonnage models for this deposit type and sub-types. In order to be included in this report, a deposit had to be closely associated with volcanic rocks, and information concerning grades and tonnage had to be available. The compiled information tabulated in Table 1 should be useful for both resource assessment and exploration.

These deposits, which are frequently classified as Kuroko-type, Noranda-type, or Cyprus-type, occur in submarine mafic to felsic volcanic rocks throughout the geologic column. Massive sulfide deposits are tabular bodies that may or may not have a discordant stockwork or stringer zone stratigraphically beneath them. The principal ore minerals may include chalcopyrite, sphalerite, galena, pyrite, pyrrhotite, and magnetite. Silver, gold, bismuth, tin, cobalt, or other metals may occur in minable amounts. Gangue minerals may include quartz, barite, calcite, gypsum, sericite, or chlorite.

TABLE 1

Table 1 contains 509 deposits and displays 54 deposits per page. The deposits are numbered sequentially for the convenience of following the deposits through sets of four pages per group of deposits. For example, the first 54 deposits are listed with the headings of deposit name, country, latitude, longitude, tonnage of ore, and contained metals on the first page of Table 1, host rocks for the same set of deposits on the second page, minerals on the third page, and discovery dates, deposit age, deposit area, deposit dimensions, ore types, and references on the fourth page. The next group of 54 deposits is listed with the same headings repeated again in the next four pages of the table, and so on.

Information in Table 1 was compiled mostly from published sources. Some information was provided by personal correspondence. Randolph Koski provided data for Big Mike, Malaiba, Rua Cove, York Harbour, and deposits in Cyprus; John Slack provided data for Bald Mountain, Davis, Ore Hill, and Rosebery; and Norman Page provided data for Gamle Folldal. Information from field observations was gathered for Spenceville, Penn, and Keystone-Union.

The information presented in Table 1 is stored in a computer data base with a hierarchical organization under the SPIRES system at the Center for Information Processing at Stanford University, California. The SPIRES system with the WILBUR editor was used to create the table.

## DESCRIPTION OF TABLE HEADINGS

### NUMBER (NUM)

Sequential numbers aid the reader in identification of deposits in the table.

### DEPOSIT NAME

Deposit names are listed alphabetically in Table 1. In order to present the data in a consistent form, deposits were, in some cases, grouped differently than the way they are presented in the literature. A deposit is defined in this paper as a single concordant orebody with or without a discordant stockwork or stringer zone, or a series or cluster of concordant orebodies within a distance of 500 m of one another along the same stratigraphic horizon. This arbitrary 500-m limit may combine deposits within a district (e.g. Quemont-Horne), or subdivide a large deposit (e.g. Buchans). In the latter case, Buchans was split into three deposits: 1) Lucky Strike-Rothermere; 2) McLean; and 3) Old Buchans-Oriental. In Table 1, deposits that have been subdivided are shown in parenthesis, e.g. Buchans (McLean).

Deposits occurring in the transition zone between volcanic and sedimentary rocks were treated with the following arbitrary rules in deciding which to include. Base-metal deposits were not included if they occur in sediments not associated with volcanic rocks. Deposits occurring in sediments were included if the sedimentary hosts containing the deposits are minor units in volcanic rock formations (e.g. Heath Steele). Also included were deposits that occur on top of the volcanic piles, beneath sedimentary formations (e.g. Herrerias). The latter case presented the most difficulty in deciding which deposits to include as some occur in the volcanics or sedimentary horizons above the volcanic piles. Generally, a deposit occurring in sediments was included if it was close to the contact with volcanic rocks.

For complete names of deposits that have been abbreviated or truncated, due to limited space in Table 1, see appendix, Table A.

### COUNTRY (CTRY)

The location of each deposit is represented by a country, country-province, or country-state, expressed in four-letter codes (see appendix, Table E). For country-province and country-state codes, the first two letters abbreviate the country name and the last two letters the state or province name, e.g. USCA represents United States-California and CNMN represents Canada-Manitoba.

### LATITUDE (LAT) AND LONGITUDE (LONG)

Both latitude and longitude are expressed in degrees, minutes, and seconds. The locations are expressed in positive coordinates for north and west, and negative coordinates for south and east. Poorly known locations are indicated

by zeros in the minutes or seconds positions or, in a few cases, by zeros in the degrees position.

#### TONNAGE OF ORE (TORE)

Tonnage of ore (production + reserves or resources) is expressed in thousands of metric tons. Because of various mathematical computations, such as the conversion to metric units, more significant digits are presented in the table than are justified by the quality of the original estimates. Either one or two significant digits is appropriate in viewing this data.

#### CONTAINED METAL (CU, ZN, PB, AG, AU)

Copper (Cu), zinc (Zn), and lead (Pb) are expressed in thousands of metric tons. Silver (Ag) and gold (Au) are expressed in metric tons. All of the deposits in Table 1 contain reported copper. In addition to copper, many deposits contain zinc, lead, silver, and gold. The contained metal values showing zeros in the table do not necessarily indicate a lack of those metals in the deposits. Some metal grades, particularly lead and gold, are not published for many deposits. The contained metal values should be viewed as having no more than two significant digits for the reason stated under Tonnage of Ore.

#### HOST ROCKS

Due to the variety of compositions and textures and the great thicknesses of some volcanic formations, it was necessary to use some rules for consistency in compiling and tabulating the host rock data. The host rocks are designated in stratigraphic sequence numbers, 2, 1, -1, -2, and -3, all relative to the position of the massive sulfide horizon at sequence 0 (not shown in Table 1); sequence 2 is the youngest host rock and sequence -3 is usually the oldest. Each sequence represents the predominate host rock. If a sequence was reported to be overturned (or deemed to be) it was corrected to its original stratigraphic position.

The host rocks selected are immediately adjacent to the orebody and within a stratigraphic range of 1,000 m--not more than 500 m above and 500 m below the ore horizon. Therefore, the two host rock sequences, 2 and 1, stratigraphically above the ore horizon total 500 m in thickness, and the three sequences, -1, -2, and -3, stratigraphically below the ore horizon total 500 m in thickness. Because of these limitations, some thin, minor rock units and major rock units beyond the sequence limit or the 500 m-limit are not shown in the host rock stratigraphy.

In Table 1, the rock sequences with blanks are assumed to contain the nearest host rock listed in the stratigraphic sequence. For example, in Agrokipia, sequence -1 contains pillow basalt and sequences -2 and -3 are blank. This indicates that the pillow basalt is at least 500 m thick and that the sequences -2 and -3 are assumed to contain the pillow basalt. The reason for not filling the blanks was to eliminate repetition of the host rocks in the stratigraphy.

The nomenclature of the host rocks reported in the literature often varies from deposit to deposit, due to different levels of petrographic and geochemical study. For example, a greenstone at one deposit may be called a basalt flow at another deposit in the same volcanic formation. In addition, errors in rock classification may be due to local effects of alteration associated with deposits. To reduce such inconsistencies, stratigraphic cross-sections of volcanic formations were compiled from geologic maps to help correlate the host rocks for separate deposits within the formations. This enabled us, in most cases, to replace the metamorphic nomenclature (greenstone, greenschist, etc.) with a primary volcanic rock name. When stratigraphic projections were not possible, the following table was used as an aid for translating the primary volcanic rocks from their metamorphic equivalents:

qtz-mica schist, sericite schist	=	rhyolite tuff
qtz-feld-sericite gneiss, felsite	=	rhyolite
qtz porphyry, qtz-feld porphyry	=	rhyolite porphyry
greenschist, chl schist, biot-chl schist	=	andesite tuff
pyrox amphibolite, horn gneiss	=	andesite
amphibolite, greenstone	=	basalt

When primary volcanic rocks were not determinable, reported host rock names were used (e.g. chlorite schist at Hixbar). When textures such as tuff, breccia, flow, pillow, etc., were not reported, the rocks were designated as "felsic volcanics" or "mafic volcanics", or, when the composition was specified, "rhyodacite" or "andesite".

Rock names in the literature were sometimes modified for consistency. For example, names like porphyritic rhyolite and rhyolite porphyry always appear in the table as rhyolite porphyry, and brecciated andesite and andesite breccia always appear as andesite breccia. Some general rock names such as acid tuff, felsic tuff, and tuffite were modified to rhyolite tuff, and iron formations and ferruginous formations were modified to ferruginous chert. Abbreviated modifiers for host rock names are listed in their entirety in the appendix (Table B).

The ore horizon fills the position of sequence 0 in the host rock stratigraphy and usually represents the massive portion of the orebody. Some deposits contain several lenses of ore at different stratigraphic levels involving two or more rock types (e.g. Millenbach). In this case, the lower most ore lens was designated as the main ore horizon (sequence 0) and the rocks containing the other ore lenses above were placed in the upper sequences 2 and 1.

Many deposits contain a stringer (stockwork) zone stratigraphically beneath the massive ore horizon. As a rule, the stringer zone was not included in the sequence 0 position, except in deposits where it constitutes the main ore type (e.g. Limni). Host rocks containing the stringer zone are always placed in the lower sequences -1, -2, and -3.

## MINERALS

These include ore and gangue minerals, typically arranged in order of abundance from left to right. Because of space limitations, less common and rare minerals were omitted in some deposits. Abbreviated mineral names are

listed in their entirety in the appendix (Table D).

#### DISCOVERY DATES (DISC)

Discovery dates are represented as the year the massive sulfide deposit was first discovered. Dates that are B.C. are designated with a "-" sign. Dates reported within a range of a decade, such as 1890s or 1930s, are designated with ">" preceding the first year of the decade. Dates preceded by "<" represent discoveries made before the listed date, which is the earliest date reported for the deposit; these dates were included because they may be close to the actual discovery dates.

#### DEPOSIT AGE

The age of the deposit is considered to be the same as the age of the enclosing host rocks. Deposits having host rocks with a different age above than below the deposit were assigned the age of the host rocks stratigraphically underlying the deposit. Precambrian is split into Archean and Proterozoic, using 2,500 m.y. as the division between them. Abbreviated age names are listed in their entirety in the appendix (Table C).

#### AREA

The area of the deposit, expressed in  $\text{km}^2$ , is listed only when the dimensions of the deposit (A, B, and C axis) are not reported, or when there is more than one orebody per deposit. In cases where the area involved computation, an elliptical shape was assumed, unless the shape of the deposit was specified. For deposits containing more than one orebody, the areas of the orebodies were summed. Values smaller than one hundredth of a  $\text{km}^2$  are expressed in exponents, for example 3.5E-03 is  $3.5 \times 10^{-3} \text{ km}^2$ .

#### DIMENSIONS OF THE DEPOSIT (A, B, C)

Deposit dimensions are given as the A, B, and C axis in kilometers, with the A axis being the longest dimension and the C axis the shortest dimension. Dimensions smaller than one hundredth of a km are expressed in exponents, for example 8E-03 is  $8 \times 10^{-3} \text{ km}$ .

#### ORE TYPES

The ore types listed in Table 1 include massive (mass), stringer (str), stockwork (stwk), disseminated (diss), veins (vein), and brecciated (breccia). The nomenclature for ore types in the literature has not been used consistently. For example, some investigators may distinguish between stockwork ore and stringer ore, while others may consider them synonymous. In addition, some investigators may consider veins and disseminated ore synonymous with stockwork

ore, while others may not. In the older literature, massive ores commonly were reported as veins.

Most of the ore types listed in the table are the reported terms. Some modifications of reported ore type terms were required for consistency, such as changing "veinlets" to "stringer ore" and "impregnations" to "disseminated ore".

## REFERENCES

The number codes refer to the numbered references cited.

## CONCLUSIONS

Any large compilation of data like this will not be without typographical errors, misinterpretations of published data, or omissions. The state of the literature for some deposits is out of date, thus leaving much room for interpretation. Some deposits have undergone prolific study resulting in contradictory information, thus forcing us to select or propose an alternative answer. The literature is not always complete in the information desired, thus resulting in the omission of data or deposits. Newly discovered deposits obviously are not included in the table unless published information is available.

With increasing numbers of volcanic-hosted massive sulfide deposits being discovered and developed, and many papers being written about them, it is impossible to keep abreast of all the new information that becomes available. We encourage and appreciate any information or corrections that would improve or expand the data file.

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## APPENDIX

Table A. DEPOSIT NAMES (Abbreviated or truncated in Table 1).

Bald Mountain  
 Buchans (Lucky Strike-Rothermere)  
 Buchans (Old Buchans-Oriental)  
 Bully Hill-Rising Star  
 Half Mile Lake (Sweet Grass)  
 Hanaoka (Doyashiki-Tsutsumizawa-Kamiyama-Ochiaizawa-Shakanaih 1-3)  
 Hanaoka (Matsumine-Shakanai 4-5-7-8-11-Takadate-Matsuki)  
 Hanawa (Aketoshi-Osaki)  
 Kosaka (Uchinotai-Uwamuki)  
 Kunitomi (1-5-1N-Fuden)  
 Mount Chalmers  
 Mount Morgan  
 Mount Mulcahy  
 Mount Lyell  
 North Keystone  
 San Antonio-Planes  
 San Guillermo-Sierra Bullones  
 Tsuchihata (Honniozawa)  
 Tsuchihata (Shiratsuchi)  
 Tsuchihata (Uenono-Okinazawa)  
 Tsuchihata (Washinosu-Akakura)  
 Whalesback-Little Deer  
 Yokota (Motoyama-Hamago)

Table B. MODIFIERS FOR HOST ROCKS

CODE	NAME
ARGL	Argillaceous
CHL	Chlorite
FRAG	Fragmental
FER	Ferruginous
HORN	Hornblende
MANG	Manganiferous
POR	Porphyry
QTZ	Quartz
SER	Sericite
VOLC	Volcanic

Table C. HOST AGE NAMES.

CODE	NAME
ARCH PROT	Archean-Proterozoic
CAMB ORD	Cambrian-Ordovician
CAMB SIL	Cambrian-Silurian
PALEO TRIAS	Paleozoic-Triassic
PERM CRET	Permian-Cretaceous
EOC PLIO	Eocene-Pliocene

TABLE D. MINERALS (Abbreviated in Table 1).

CODE	MINERAL NAME	CODE	MINERAL NAME	CODE	MINERAL NAME
ACN	ACANTHITE	DOL	DOLOMITE	PLAG	PLAGIOCLASE
ACT	ACTINOLITE	DYS	DYSCRASITE	PO	PYRRHOTITE
AG	SILVER	ELEC	ELECTRUM	POLY	POLYBASITE
ALB	ALBITE	EMP	EMPLECTITE	PROU	PROUSTITE
ALT	ALTAITE	ENG	ENARGITE	PSIL	PSILOMELANE
ALUN	ALUNITE	EPID	EPIDOTE	PYL	PYROLUSITE
AMPH	AMPHIBOLE	FAH	FAHLORE	PYR	PYRITE
ANAT	ANATASE	FELD	FELDSPAR	PYRG	PYRARGYRITE
AND	ANDALUSITE	FIB	FIBROFERRITE	PYRM	PYROMORPHITE
ANCL	ANGLESITE	FL	FLUORITE	QTZ	QUARTZ
ANHY	ANHYDRITE	FRB	FREIBERGITE	REAL	REALGAR
ANK	ANKERITE	GAH	GAHNITE	RHOD	RHODOCHROSITE
ANTH	ANTHOPHYLLITE	GAL	GALENA	RUT	RUTILE
AP	APATITE	GAR	GARNET	S	SULFUR
APY	ARSENOPYRITE	GED	GEDRITE	SAUS	SAUSSERITE
ARG	ARGENTITE	GEO	GEOCRONITE	SB	ANTIMONY
AS	ARSENIC	GOE	GOETHITE	SCP	SCAPOLITE
AU	GOLD	GOS	GOSLARITE	SER	SERICITE
AZUR	AZURITE	GR	GRAPHITE	SID	SIDERITE
BAR	BARITE	GRAM	GRAMMATITE	SPEC	SPECULARITE
BER	BERTHIERITE	GRN	GREENOCKITE	SPH	SPHALERITE
BEU	BEUDANTITE	GUD	GUDMUNDITE	STAN	STANNITE
BI	BISMUTH	GYP	GYPSUM	STAUR	STAUROLITE
BIE	BIEBERITE	HEM	HEMATITE	STIB	STIBNITE
BIOT	BIOTITE	HES	HESSITE	STLP	STILPNOMELANE
BISM	BISMUTHINITE	HORN	HORNBLENDE	STND	STANNOIDITE
BOR	BORNITE	IDA	IDAITE	STROM	STROMEYERITE
BOUL	BOULANGERITE	IDD	IDDINGSITE	SYL	SYLVANITE
BOUR	BOURNONITE	ILL	ILLITE	TEBI	TELLUBROBISMUTHITE
BROC	BROCHANTITE	ILM	ILMENITE	TELL	TELLURIDES
BRTH	BREITHAUPTITE	JAM	JAMESONITE	TENN	TENNANTITE
CALC	CALCITE	JAR	JAROSITE	TENR	TENORITE
CALV	CALAVERITE	JAS	JASPER	TETD	TETRADYMITE
CARB	CARBONATES	KAOL	KAOLINITE	TETH	TETRAHEDRITE
CASS	CASSITERITE	KOB	KOBELLITE	TIT	TITANITE
CC	CHALCOCITE	KREN	KRENNERITE	TOUR	TOURMALINE
CER	CERUSSITE	KY	KYANITE	TREM	TREMOLITE
CH	CHERT	LEUC	LEUCOXENE	ULL	ULLMANNITE
CHD	CHALCEDONY	LIM	LIMONITE	VALL	VALLERITE
CHL	CHLORITE	LIN	LINNAEITE	VIO	VIOLARITE
CHLD	CHLORITOID	LUZ	LUZONITE	WIT	WITTICHENITE
CHR	CHRYSOCOLLA	MACK	MACKINAWITE	WUR	WURTZITE
CLZ	CLINOZOISITE	MAG	MAGNETITE	ZEOL	ZEOLITE
COB	COBALTITE	MAGH	MAGHEMITE	ZIR	ZIRCON
COL	COLORADOITE	MAL	MALACHITE		
COP	COPIAPITE	MAR	MARCASITE		
COR	CORDIERITE	MEL	MELANTERITE		
COS	COSALITE	MEN	MENEGHINITE		
COV	COVELLITE	MILL	MILLERITE		
CPY	CHALCOPYRITE	MOLY	MOLYBDENITE		
CT	CHALCANTHITE	MONT	MONTMORILLONITE		
CU	COPPER	MUSC	MUSCOVITE		
CUB	CUBANITE	NEO	NEODIGENITE		
CUM	CUMMINGTONITE	NIC	NICCOLITE		
CUP	CUPRITE	PAT	PATRINITE		
DIG	DIGENITE	PENT	PENTLANDITE		
DIOP	DIOPSIDE	PET	PETZITE		

Table E. COUNTRY NAMES (Abbreviated in Table 1).

CODE	COUNTRY NAME
AUNS	Australia, New South Wales
AUQL	Australia, Queensland
AUTS	Australia, Tasmania
AUWA	Australia, Western Australia
BRMA	Burma
CNBC	Canada, British Columbia
CNMN	Canada, Manitoba
CNNB	Canada, New Brunswick
CNNF	Canada, Newfoundland
CNNS	Canada, Nova Scotia
CNNT	Canada, Northwest Territory
CNON	Canada, Ontario
CNQU	Canada, Quebec
CNSK	Canada, Saskatchewan
CYPS	Cyprus
FIJI	Fiji
FNLD	Finland
FRNC	France
GBBR	Great Britain
GUAT	Guatemala
IRAN	Iran
IRLD	Ireland
JAPN	Japan
NRWY	Norway
OMAN	Oman
PKSN	Pakistan
PLPN	Philippines
PORT	Portugal
SAAR	Saudi Arabia
SPAN	Spain
SWDN	Sweden
TRKY	Turkey
USAK	U.S., Alaska
USAL	U.S., Alabama
USAZ	U.S., Arizona
USCA	U.S., California
USGA	U.S., Georgia
USME	U.S., Maine
USMS	U.S., Massachusetts
USNV	U.S., Nevada
USNH	U.S., New Hampshire
USNM	U.S., New Mexico
USOR	U.S., Oregon
USVT	U.S., Vermont
USWI	U.S., Wisconsin
VNZL	Venezuela



NUM	HOST ROCKS:	SEQ=2	SEQ=1	SEQ=-1	SEQ=-2	SEQ=-3
1	CHEM	PILLOW BASALT	RHYOLITE FLOW	RHYOLITE TUFF	RHYOLITE FLOW	RHYOLITE TUFF
2	DACITE TUFF	TUFACEOUS SANDSTONE	PERLITIC TUFF	RHYOLITE TUFF	RHYOLITE POR	RHYOLITE TUFF
3	ANDESITE	RHYOLITE TUFF	CALCAREOUS SHALE	RHYOLITE TUFF BRECCIA	RHYOLITE TUFF BRECCIA	RHYOLITE TUFF
4	RHYOLITE TUFF	BASALT FLOW	BASALT	PILLOW BASALT	RHYOLITE FLOW	RHYOLITE FLOW
5		ANDESITE TUFF	RHYODACITE TUFF	RHYOLITE TUFF	DACITE TUFF	DACITE TUFF
6	SPLITITE	DACITE	KERATOPHYRE	DACITE PYROCLASTICS	ANDESITE	ANDESITE
7	ANDESITE	KERATOPHYRE	RHYOLITE	RHYOLITE	GABBRO	PILLOW BASALT
8	RHYOLITE	RHYOLITE AGGLOMERATE	RHYOLITE TUFF	RHYOLITE CRYSTAL TUFF	DACITE FLOW	SHALE
9	RHYOLITE TUFF	RHYOLITE FLOW	RHYOLITE TUFF	RHYOLITE CRYSTAL TUFF	RHYODACITE	RHYOLITE FLOW
10	RHYOLITE	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE CRYSTAL TUFF	PILLOW BASALT	RHYOLITE FLOW
11	RHYOLITE	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE CRYSTAL TUFF	DACITE FLOW	RHYOLITE FLOW
12	ANDESITE	PILLOW BASALT	PILLOW BASALT	PILLOW BASALT	RHYOLITE FLOW	RHYOLITE FLOW
13	RHYOLITE TUFF	ANDESITE FLOW	ANDESITE FLOW	ANDESITE FLOW	RHYOLITE FLOW	RHYOLITE FLOW
14		PILLOW BASALT	RHYOLITE TUFF	RHYOLITE PYROCLASTICS	SPLITITE	RHYOLITE FLOW
15		ANDESITE FLOW	MUDSTONE	PILLOW BASALT	DIABASE DIKES	GABBRO
16		ANDESITE FLOW	RHYOLITE VOLCANICLASTICS	RHYOLITE TUFF	RHYOLITE BRECCIA	RHYOLITE FLOW
17	DACITE FLOW	RHYOLITE TUFF	FER CHERT	RHYOLITE PYROCLASTICS	QZ KERATOPHYRE TUFF	RHYOLITE FLOW
18	BASALT PYROCLASTICS	MUDSTONE	RHYOLITE TUFF	BASALT TUFF	QZ KERATOPHYRE TUFF	RHYOLITE FLOW
19	BASALT	RHYOLITE VOLCANICLASTICS	PILLOW BASALT	RHYOLITE TUFF	DACITE DIKES	GABBRO
20	RHYODACITE	FER CHERT	RHYOLITE	PILLOW BASALT	RHYOLITE BRECCIA	RHYOLITE FLOW
21	GRANULITIC SHALE	RHYOLITE TUFF	RHYOLITE	PILLOW BASALT	QZ KERATOPHYRE TUFF	RHYOLITE FLOW
22	ANDESITE TUFF	PILLOW BASALT	PILLOW BASALT	PILLOW BASALT	DACITE DIKES	GABBRO
23	SEDIMENTS	RHYOLITE	RHYOLITE	PILLOW BASALT	RHYOLITE BRECCIA	RHYOLITE FLOW
24		PILLOW BASALT	PILLOW BASALT	PILLOW BASALT	DACITE LAPILLI TUFF	DACITE BRECCIA
25	SEDIMENTS	RHYOLITE CRYSTAL TUFF	RHYOLITE CRYSTAL TUFF	RHYOLITE CRYSTAL TUFF	DACITE LAPILLI TUFF	DACITE BRECCIA
26		BASALT	RHYOLITE TUFF	RHYOLITE TUFF	DACITE LAPILLI TUFF	DACITE BRECCIA
27		RHYOLITE TUFF	KERATOPHYRE TUFF	KERATOPHYRE TUFF	DACITE LAPILLI TUFF	DACITE BRECCIA
28	DOLOMITIC MARBLE	KERATOPHYRE TUFF	KERATOPHYRE TUFF	KERATOPHYRE TUFF	DACITE LAPILLI TUFF	DACITE BRECCIA
29	QTZ KERATOPHYRE TUFF	DOLOMITIC MARBLE	DOLOMITIC MARBLE	RHYOLITE FLOW	RHYOLITE PYROCLASTICS	RHYOLITE FLOW
30	QTZ KERATOPHYRE TUFF	FER CHERT	FER CHERT	RHYOLITE CRYSTAL TUFF	DACITE LAPILLI TUFF	DACITE BRECCIA
31	JASPER	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF	CHERT	RHYOLITE TUFF
32	BASALT FLOW	MAFIC VOLC	MAFIC VOLC	RHYOLITE TUFF	MAFIC VOLC	QTZ KERATOPHYRE
33	RHYOLITE LAPILLI TUFF	HANG CHERT	HANG CHERT	RHYOLITE TUFF	RHYOLITE POR	RHYOLITE FLOW
34		RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF	DACITE FLOW	RHYOLITE FLOW
35	DIABASE	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF	RHYODACITE PYROCLASTICS	RHYOLITE FLOW
36	LIMESTONE	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF	QZ KERATOPHYRE	RHYOLITE FLOW
37		RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF	MAFIC VOLC	RHYOLITE FLOW
38	RHYOLITE POR	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF	BASALT DIKES	GABBRO
39		RHYOLITE TUFF	RHYOLITE TUFF	PILLOW BASALT	RHYOLITE FLOW	ANDESITE FLOW
40	SEDIMENTS	PILLOW BASALT	RHYOLITE TUFF	RHYOLITE TUFF	QZ KERATOPHYRE	RHYOLITE FLOW
41	SHALE	MANG CHERT	MANG CHERT	PILLOW BASALT	MAFIC VOLC	RHYOLITE FLOW
42	TUFACEOUS CLAYSTONE	RHYOLITE VITROPHYRE	RHYOLITE VITROPHYRE	RHYOLITE VITROPHYRE	BASALT DIKES	GABBRO
43		ANDESITE	ANDESITE	RHYOLITE TUFF	RHYOLITE FLOW	ANDESITE FLOW
44		ANDESITE FLOW	DACITE PYROCLASTICS	ANDESITE	RHYOLITE FLOW	ANDESITE FLOW
45		CHERT	CHERT	RHYOLITE TUFF	GRAYWACKE	ANDESITE FLOW
46	SEDIMENTS	PILLOW BASALT	BLACK SLATE	PILLOW BASALT	GRAYWACKE	ANDESITE FLOW
47		ANDESITE	ANDESITE	RHYOLITE TUFF	GRAYWACKE	ANDESITE FLOW
48		CHERT	CHERT	RHYOLITE TUFF	GRAYWACKE	ANDESITE FLOW
49	CHERT	BLACK SLATE	BLACK SLATE	CHL SCHIST	GRAYWACKE	ANDESITE FLOW
50		ANDESITE	ANDESITE	DACITE FLOW	GRAYWACKE	ANDESITE FLOW
51		ANDESITE FLOW	ANDESITE FLOW	RHYOLITE CHERTY TUFF	GRAYWACKE	ANDESITE FLOW
52	PILLOW BASALT	RHYOLITE CHERTY TUFF	RHYOLITE CHERTY TUFF	RHYOLITE TUFF	GRAYWACKE	ANDESITE FLOW
53	RHYOLITE CRYSTAL TUFF	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF	GRAYWACKE	ANDESITE FLOW
54	GRAYWACKE	ANDESITE PYROCLASTICS	PILLOW ANDESITE	PILLOW ANDESITE	GRAYWACKE	ANDESITE FLOW

## NUM | MINERALS

1	PYR,CPY,SPH,APY,QTZ,CHL
2	SPH,GAL,CPY,PYR,ENG,TETH,QTZ,BAR,GYP,KAOL,SER,CHL
3	PYR,PO,CPY,SPH,APY,AS,AG,DYS,PROU,TETH,CALC,QTZ,ZEOL,DIOP,HORN,FIELD
4	SPH,PYR,CPY,GAL,FAH,BOR,LUZ,CC,COV,AZUR,MAL,LIM,CALC,QTZ,BAR
5	PYR,CPY,SPH,PO,TENN,GAL,COV,BOR,DIQ,CC
6	PYR,CPY,PO,SPH,GAL,APY,MAR,MOLY,MAG
7	PYR,CPY,SPH,GAL,TETH,QTZ,BAR
8	PYR,SPH,CPY,FAH,PO,GAL,MAL,QTZ,CALC,BAR
9	CPY,PYR,SPH
10	PYR,CPY
11	PYR,MAG,PO,CPY,SPH,MAR,HEM,BROD,GOE,GYP,QTZ,CHL,TREM,EPID,SER,TOUR
12	PYR,PO,CPY,GAL
13	PYR,SPH,CPY,GAL,CARB
14	PYR,CPY,MEL,MAL,LIM,JAR,CC,COV,JAS,GYP
15	PYR,MAR,SPH,CPY,PO
16	PYR,MAR,SPH,CPY,PO
17	PYR,CPY,PO,SPH,GAL,FAH,COV,CC,BOR,MAL,AZUR,HEM,QTZ,CALC,BAR,ANK,OPAL
18	PYR,CPY,MAG,PO,PENT,SPH,VALL,COB,MAR,CUB,LIN,DIG,GOLD,COV,CC,BOR,LIM,MAL,BIE,CHL,QTZ,CALC,BAR
19	CPY,SPH,PYR,PO,MAG,CARB,TREM
20	PYR,CPY,PO,MAG,APY,GAL,HEM,LIM,MAL,AZUR,CUP,CARB
21	PYR,PO,CPY,SPH,GAL,CUP,MACK,VALL,APY,MAG,IJM,RUT,MOLY,TETH,BOUR,AU,AG,SB,QTZ,CARB,BIOT,CHL,MUSC,HORN,KY,FIELD,ANHY,SER
22	PO,PYR,SPH,CPY,GAL,LIM
23	PYR,CPY,LIM,HEM
24	CPY,SPH,GAL
25	MAG,CPY,PYR,SPH,PO,QTZ,GED,STAUR,HORN,PLAG,CHL,SAUS
26	SPH,CPY,GAL,PYR,APY,MAG
27	PYR,PO,CPY,SPH
28	PYR,CPY,SPH,MAG,PO,GAL,CUB,MAR,FAH,TETD,BI,BISM,HES,EMP,MIT,MAL,CHR,LIM,HEM,COV,QTZ,CHL,MICA,CALC
29	PYR,SPH,CPY,GAL,TETH,MAG,BAR,BIOT
30	PYR,SPH,CPY,GAL,TETH,MAG,BAR,BIOT
31	PYR,CPY,SPH,MAG,HES,SYL,ALT,TETD,ARG,COB,MAL,CHR,AZUR,HEM,CHL,QTZ,CALC
32	PYR,PO,SPH,GAL,CPY,QTZ,SER,CHL
33	CPY,SPR,SPH,GAL,CC,COV,QTZ,CHL
34	SPH,GAL,CPY,PYR
35	PYR,SPH,GAL,CPY,API,BOR,TETH
36	CPR,SPH,PYR,GAL,FAH,BOR,CC,COV,CUP,BAR,JAS
37	SPH,GAL,CPY,PYR,PO,QTZ
38	PYR,CPY,SPH,TETH,GRN,AZUR,MAL,QTZ,CALC,BOR,CHL,SER
39	PYR,PO,CPY,SPH
40	PYR,PO,CPY,MAG,SPH,PLAG,HORN,GAR,QTZ,AP,EPID,DIOP,BIOT,GED,GAH,STAUR,CUM
41	MAG,CPY,PYR,AZUR,MAL,CHR,LIM,GAR,QTZ,EPID
42	PYR,CPY,SPH,BOR,FAH,COV,CC,LIM,QTZ,CHD,CHL,SER,BAR,GYP
43	PYR,CPY,SPH
44	PYR,CPY,SPH
45	PYR,PO,SPH,CPY,GAL
46	PYR,CPY,SPH,FAH,QTZ,SID
47	PYR,PO,SPH,GAL,CPY,MAG,GAH
48	GAL,SPH,CPY,APY,CUB,TETH,BOUL,PYRG,ANGL,CER,PYRM,MAL,AZUR,GOS,BROC,ANK,CALC,QTZ,SER,GAR,EPID
49	PYR,CPY,SPH,QTZ,CHL
50	PO,PYR,CPY,SPH,GAL,CUB,QTZ,SID,CHL,ANK
51	PYR,SPH,CPY,PO,QTZ,CHL,SER,EPID,CARB
52	PYR,PO,SPH,CPY,MAG
53	PYR,PO,CPY,SPH,MAG
54	PYR,CPY,SPH,GAL,MAG

NUM	DISC	DEPOSIT-AGE	AREA	A	B	C	ORE TYPES	REFERENCES
1	1973	CRETACEOUS		0.01			MASS, STWK	4,270
2	1909	MIOCENE		3.5E-03			MASS	406
3	1930	PROTEROZOIC		0.21	0.18	0.15	MASS	150,201
4	1862	TRIASSIC		0.08			MASS, STR, DISS	5,6,142
5	1951	CRETACEOUS		0.08			STWK, MASS	32,73,80,182,421
6	1945	PROTEROZOIC		0.17	0.03	0.02	MASS	187,196,426
7	1938	CRETACEOUS		0.2	0.05	0.02	MASS, STR, STWK, DISS	247,248,306,434
8	-2000	CRETACEOUS		0.15	0.14	0.02	MASS	150
9	1927	PROTEROZOIC					MASS	65,435
10	1863	ORDOVICIAN					MASS	65,97,133,165,396
11	1924	ARCHEAN	4.99E-03	0.17	0.07	0.05	DISS	65
12	1946	ARCHEAN					MASS, STWK	56,230,402
13	1965	CARBONIFEROUS					MASS, STWK	32
14	1954	CRETACEOUS		0.03	0.11	0.08	MASS	99,119,183,396,405,451
15	1925	ARCHEAN					MASS, STR, STWK, DISS	149,156,202,248,269,306,434
16	1929	ARCHEAN					MASS, DISS, STR	149,158,202,248,269
17	1000	JURASSIC		0.72			MASS	109,119,127,128,314
18	-2000	CRETACEOUS		0.518			MASS	251,411
19	1963	PROTEROZOIC					MASS	37,119,272,320,393,428,452
20	1962	ARCH PROT		0.01			MASS	84,460
21	>1900	ORDOVICIAN		0.03			MASS, STWK	182,309,421
22	1897	PROTEROZOIC					MASS	85,153
23	1937	CRETACEOUS					MASS	56,161
24	1968	PROTEROZOIC					MASS, STR, DISS, STWK	329
25	1969	SILURIAN			1.03	0.73	MASS	146,169,236
26	1956	ORDOVICIAN			0.24	0.14	MASS	288,310,378,448
27		CAMB. ORD					STWK	39
28	1936	PROTEROZOIC					MASS, STR	104
29	<1949	PROTEROZOIC					VEIN	454
30	<1949	PROTEROZOIC					MASS, STWK	56,235,402,458
31	1965	PROTEROZOIC					MASS	52,207
32	1907	ORDOVICIAN					MASS	68,278,279,423
33	>1750	ORDOVICIAN					MASS	211,241
34		EOC. PLIO					MASS, DISS	126,455
35	1969	CARBONIFEROUS		1.2	0.4	0.05	MASS, DISS	24
36	1954	EOC. PLIO					MASS, STR	3
37	<1966	CARBONIFEROUS					MASS, DISS, STR	51,52,207,454
38	>1890	DEVONIAN	5E-04				MASS, DISS, STR	126
39	1977	ORDOVICIAN	0.01				MASS	28,65,109
40	1969	SILURIAN					MASS	65,131
41	<1964	EOCENE					MASS, DISS, STWK	248,434
42	1961	EOCENE					MASS, VEIN	65,273
43		DEVONIAN					MASS, STWK	181,229,419,420
44	1972	PROTEROZOIC					MASS	4,270
45	1951	ARCHEAN	0.01				MASS, DISS, STWK	33,155,156,274
46		CRETACEOUS					MASS, STWK, DISS	18,65
47	1956	ARCHEAN	0.31				MASS, DISS, STR	187,356,373
48	1891	ORDOVICIAN					MASS, DISS, STR	287,373
49	1973	CRETACEOUS					MASS, DISS, STWK	65,390,425
50	1897	TERTIARY						
51	1926	ARCHEAN						
52		ARCHEAN						
53	1957	ARCHEAN						
54	1874	ORDOVICIAN						



NUM	HOST ROCKS: SEQ=1	SEQ=2	SEQ=3
55	BASALT	QTZ KERATOPHYRE	GRAPHITIC SHALE
56	BASALT	QTZ KERATOPHYRE	GRAPHITIC SHALE
57	BASALT	QTZ KERATOPHYRE	GRAPHITIC SHALE
58	BASALT	QTZ KERATOPHYRE	GRAPHITIC SHALE
59	ANDESITE	ANDESITE	RHYOLITE
60	RHYOLITE VITROPHYRE	RHYOLITE VITROPHYRE	SEDIMENTS
61	PILLOW BASALT	PILLOW BASALT	ANDESITE BRECCIA
62	RHYOLITE TUFF	ANDESITE FLOW	BASALT FLOW
63	ANDESITE FLOW	ANDESITE FLOW	
64	SEDIMENTS	RHYOLITE PYROCLASTICS	SEDIMENTS
65	QTZ KERATOPHYRE TUFF	QTZ KERATOPHYRE TUFF	QTZ KERATOPHYRE TUFF
66	QTZ KERATOPHYRE AGGLOMERATE	QTZ KERATOPHYRE AGGLOMERATE	QTZ KERATOPHYRE TUFF
67	ANDESITE	RHYOLITE TUFF	ANDESITE TUFF
68	SEDIMENTS	RHYOLITE TUFF BRECCIA	RHYOLITE TUFF
69	ANDESITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF
70	SHALE	RHYOLITE TUFF	RHYOLITE TUFF
71	SHALE	QTZ KERATOPHYRE	QTZ KERATOPHYRE
72	ANDESITE	ANDESITE	DACITE
73	SHALE	PILLOW BASALT	SHALE
74	PILLOW BASALT	PILLOW BASALT	DACITE TUFF
75	QTZ KERATOPHYRE	QTZ KERATOPHYRE	PILLOW BASALT
76	SEDIMENTS	ANDESITE TUFF	ANDESITE
77	RHYOLITE	ULTRAMAFIC PYROCLASTIC	ULTRAMAFIC PYROCLASTIC
78	RHYOLITE	RHYOLITE TUFF	DACITE BRECCIA
79	FER CHERT	GRAPHITIC ARGILLITE	DACITE BRECCIA
80	FER CHERT	GRAPHITIC ARGILLITE	DACITE FLOW
81	DACITE FLOW	DACITE PYROCLASTICS	DACITE FLOW
82	DACITE FLOW	DACITE PYROCLASTICS	DACITE FLOW
83	DACITE FLOW	DACITE PYROCLASTICS	DACITE FLOW
84	RHYOLITE TUFF	QTZ KERATOPHYRE	QTZ KERATOPHYRE
85	BASALT TUFF	QTZ KERATOPHYRE TUFF	PILLOW BASALT
86	RHYOLITE FLOW	GRAPHITIC SHALE	DACITE FLOW
87	ANDESITE FLOW	RHYOLITE FLOW	BASALT FLOW
88	ANDESITE FLOW	RHYOLITE TUFF	RHYOLITE TUFF
89	RHYOLITE TUFF	ARGILLITE	RHYOLITE CRYSTAL TUFF
90	DACITE CRYSTAL TUFF	TUFFACEOUS SHALE	TUFFACEOUS SHALE
91	CHERT	PILLOW BASALT	PILLOW BASALT
92	RHYOLITE BRECCIA	RHYOLITE TUFF	RHYOLITE CRYSTAL TUFF
93	CHERT	PILLOW BASALT	PILLOW BASALT
94	SHALE	SHALE	RHYOLITE POR
95	SHALE	MANG JASPER	RHYOLITE AGGLOMERATE
96	SHALE	SHALE	IRHYOLITE TUFF
97	PILLOW BASALT	CHERT	IRHYOLITE TUFF
98	GRAPHITIC ARGILLITE	GRAPHITIC ARGILLITE	BASALT VOLCANICLASTICS
99	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE VOLCANICLASTICS
100	QUARTZITE	RHYOLITE TUFF	QUARTZITE
101	ANDESITE	ANDESITE	RHYOLITE FLOW
102	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF
103	SEDIMENTS	PILLOW BASALT	PILLOW BASALT
104	RHYOLITE TUFF	SHALE	SHALE
105	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF
106	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF
107	RHYOLITE TUFF	CHERT	CHERT
108	ANDESITE POR	RHYOLITE TUFF	ANDESITE PYROCLASTICS

## NUMI MINERALS

55	CPY, PYR, PO, MAG, SPH, GAL, HEM, AU, CALC, QTZ, ALB, DOL, BIOT, ANK, MUSC, CHL, ACT, IDD
56	CPY, PYR, PO, MAG, SPH, GAL, HEM, AU, CALC, QTZ, ALB, DOL, BIOT, ANK, MUSC, CHL, ACT, IDD
57	CPY, PYR, PO, MAG, SPH, GAL, HEM, AU, CALC, QTZ, ALB, DOL, BIOT, ANK, MUSC, CHL, ACT, IDD
58	CPY, PYR, PO, MAG, SPH, GAL, HEM, AU, CALC, QTZ, ALB, DOL, BIOT, ANK, MUSC, CHL, ACT, IDD
59	PYR, SPH, CPY, GAL, TETH, BOR, CUP, CC, COV, MAL, AZUR, BAR, QTZ, CALC, SER, ACT
60	PYR, CPY, SPH, GAL, QTZ
61	CPY, BOR, DIG, TEIR, CUP
62	PYR, CPY, TETH, SPH, GAL
63	CPY, PYR, PO, MAG, SPH, PENT, VIO
64	CPY, PO, SPH, GAL, CPY, COS, BI, STAN, MACK, BRTH, ULL, QTZ
65	CPY, PYR, PO, MAG, JLM, TIT, SPH, GAL, APY, CUB, VALL, GUD, RUT, MAR, QTZ, CHL, CALC, SER, PLAG, EPID
66	PYR, PO, SPH, GAL, CPY, APY, BOUL, JAM, MAG, TETH, BOUR, GEO, GUD, PYGR, BI, VALL, BOR, HEM, ILM, RUTT, MAR, S, QTZ, CHL, SER, BIOT, PLAG, GAH, GAR, HORN, EPID, CALC
67	PYR, PO, SPH, CPY, MAG, VALL, ILM, APY, MAR, HEM, QTZ, CHL, SER, BIOT, GAR, HORN, PLAG, EPID
68	PYR, PO, CPY, SPH, GAL, LIM, MAL, AZUR, PYL, QTZ, CALC, TOUR, BIOT
69	SPH, PYR, TETH, CPY, GAL, HEM, LIM, CC, MAL, AZUR, SER, QTZ, BAR, CALC
70	SPH, GAL, CPY, PYR, PO, APY, MACK
71	PYR, PO, CPY, APY, QTZ, SER, CHL, AND, BIOT
72	PYR, PO, CPY, SPH
73	CPY, PO, SPH, PYR, GAL, MAG, APY, QTZ, CALC, SER, EPID, GAR
74	PYR, CPY
75	PYR, CPY, SPH, GAL
76	PYR, SPH, CPY, GAL, FAH, PO, ARG, AU, BOR, QTZ, CALC, FL, BAR, ANHY, GYP, SID, MUSC, CLZ
77	PO, CPY
78	PYR, SPH, CPY, GAL, APY, PO, FAH, CALC, CHL, SER, QTZ
79	PYR, MAG, PO, SPH, GAL, CPY, APY, MAR, BDL, STAN, CASS, PYR, ANGL, QTZ, SER, CALC, LEUC, GR, CHL
80	PYR, PO, SPH, GAL, CPY, FAH, MAG, BDL, STAN, CASS, APY, BOR, CC, COV, AG, CU, ENG, ANGL, LIM, HEM, GR, QTZ, CALC, DOL, CHL, BAR, PYRM, BEU, CER, MAR
81	SPH, CPY, GAL, PYR, TETH, TELL, BOR, COV, ENG, AG, HEM, BAR, QTZ, CALC, FL, SER, CHL
82	SPH, CPY, GAL, PYR, TETH, TELL, BOR, COV, ENG, AG, HEM, BAR, QTZ, CALC, FL, SER, CHL
83	SPH, CPY, GAL, PYR, TETH, TELL, BOR, COV, ENG, AG, HEM, BAR, QTZ, CALC, FL, SER, CHL
84	PYR, SPH, CPY, GAL, FAH, BOR, CC, CU, BOR, COV, CUP, MAL, AZUR, LIM, JAR, GYP, BAR, QTZ, ANHY
85	PYR, PO, CPY, SPH, GAL, CUB, MACK, VALL, APY, MAG, ILM, RUT, HOLY, TETH, BOUR, AU, AG, SB, QTZ, CARB, BIOT, CHL, MUSC, HORN, KY, FELD, ANHY, SER
86	PYR, SPH, GAL, CPY, PO, APY, CUB, STAN, BOUR, MEN, TETH, HEM, GR
87	PYR, CPY, SPH, PO, QTZ, DOL, CHL, SER
88	PYR, PO, SPH, GAL, CPY, CALC
89	PYR, CPY, GAL, SPH, KREN, PET, PO, BISM, LIN, MAG, STAN, APY, COV, STIB, CASS, MILL, PENT, VIO
90	PYR, SPH, GAL, CPY, APY, TENN, AU, QTZ, CH, DOL, CALC, SER, BAR
91	PYR, CPY, BOR, CC, LIM, QTZ, CLAY
92	PYR, SPH, GAL, CPY, APY, MAG, TETH, BOR, CU, STLP, QTZ, SER, CALC, TALC, ANK, CHL, SID
93	PYR, CPY
94	PYR, CPY
95	PYR, SPH, GAL, CPY, APY, PO, MAR, STAN, GUD, BOUR, MEN, CASS
96	PYR, SPH, CPY, GAL
97	PYR, CPY, SPH, GAL, PO, MOLY, MAG, DOL, QTZ, TALC, CHL, FELD
98	PYR, CPY, SPH, APY, FAH, COB, WUR, MAG
99	PYR, CPY, SPH, QTZ, CHL, GAR
100	PYR, PO, CPY, GAL, SPH
101	SPH, PYR, PO, CPY, GAL, MAR, APY, BOUR, BOUL, FAH, PYRG, PROU, AU, ALT, HES, GEO, CARB, TREM
102	PYR, CPY, SPH, GAL
103	PYR, CPY, PO, MAG, SPH, GAL, CHL, QTZ, CALC
104	PYR, SPH, CPY, GAL, AP
105	PYR, CPY, SPH
106	PYR, CPY, SPH, QTZ
107	PYR, SPH, CPY, CUP, QTZ
108	PYR, CPY, SPH, CC, BOR, MAL, AZUR





NUM	HOST ROCKS:	SEQ#-1	SEQ#-1	SEQ#-2	SEQ#-2	SEQ#-3
109	RHYOLITE FLOW	BASALT FLOW   ANDESITE FLOW	BASALT VOLC SEDIMENTS   CHERT	ANDESITE FLOW   RHYOLITE LAPILLI TUFF	RHYOLITE VOLCANICLASTICS	
110						
111						
112	DACITE TUFF	RHYOLITE TUFF				
113						
114						
115	RHYOLITE AGGLOMERATE	ARGILLITE   MAFIC VOLC   SHALE	MAFIC VOLC   IRHYOLITE TUFF   RHYOLITE TUFF	ANDESITE FLOW   ANDESITE FLOW	ANDESITE VOLC SEDIMENTS   BASALT VOLC SEDIMENTS	
116	BASALT VOLC SEDIMENTS					
117						
118						
119	RHYOLITE BRECCIA	GRAPHITIC ARGILLITE   FELSIC VOLC   VOLC SEDIMENTS	RHYOLITE BRECCIA   ANDESITE FLOW	RHYOLITE POR   RHYOLITE TUFF	ANDESITE FLOW   RHYOLITE BRECCIA   DACITE BRECCIA   BASALT FLOW	
120						
121	RHYOLITE AGGLOMERATE	RHYOLITE TUFF   RHYOLITE TUFF	ANDESITE FLOW	RHYOLITE TUFF   DACITE TUFF	RHYOLITE BRECCIA   DACITE BRECCIA   BASALT FLOW	
122	FER CHERT	RHYOLITE TUFF				
123						
124	RHYOLITE VOLCANICLASTICS	BASALT FLOW	RHYOLITE VOLCANICLASTICS	RHYOLITE TUFF	ANDESITE VOLC SEDIMENTS	
125						
126	ANDESITE TUFF	RHYOLITE TUFF   ANDESITE POR   ANDESITE POR	DACE FLOW   ANDESITE FLOW	ANDESITE AGGLOMERATE   ANDESITE FLOW	ANDESITE AGGLOMERATE   ANDESITE FLOW	
127	RHYOLITE AGGLOMERATE	RHYOLITE TUFF   ANDESITE POR	ANDESITE POR   RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF	
128	RHYOLITE TUFF	RHYOLITE TUFF   RHYOLITE TUFF	ANDESITE POR   RHYOLITE TUFF	ANDESITE FLOW	RHYOLITE TUFF	
129						
130	LIMESTONE	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF	
131	RHYOLITE	RHYOLITE POR	RHYOLITE POR	RHYOLITE TUFF	RHYOLITE TUFF	
132						
133						
134	FELSIC VOLC	RHYOLITE   RHYOLITE	MAFIC VOLC   RHYOLITE VOLC SEDIMENTS	ANDESITE VOLC SEDIMENTS		
135						
136						
137	CHERT BRECCIA	CHERTY LIMESTONE	JASPER   PILLION BASALT	ANDESITE FLOW   ANDESITE TUFF	BASALT FLOW	
138	SHALE					
139						
140	RHYOLITE AGGLOMERATE	RHYOLITE FLOW	RHYOLITE FLOW	RHYOLITE TUFF	DACE	
141	RHYODACITE FLOW	RHYOLITE FLOW	RHYOLITE FLOW	RHYOLITE TUFF		
142	LIMESTONE	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF		
143		SHALE	SHALE	SHALE		
144	RHYOLITE TUFF	PILLION BASALT	QTZ KERATOPHYRE TUFF	RHYODACITE		
145	QTZ KERATOPHYRE TUFF	ANDESITE	ANDESITE FLOW	DACE TUFF		
146						
147	ANDESITE TUFF	RHYOLITE TUFF   FER CHERT	ANDESITE TUFF   ANDESITE FLOW	RHYOLITE BRECCIA		
148	RHYOLITE TUFF	ANDESITE FLOW	DACE TUFF			
149	ANDESITE FLOW	RHYOLITE POR	DACE POR	ANDESITE BRECCIA		
150						
151						
152	SEDIMENTS	QTZ KERATOPHYRE	PILLON BASALT	BASALT DIKES		
153	ARGILLITE	ANDESITE	ANDESITE BRECCIA	GABBRO		
154	SHALE	RHYOLITE TUFF	RHYOLITE TUFF	SHALE		
155	GRAYWACKE	JASPER	RHYOLITE TUFF	JASPER		
156	GRANULITE	RHYOLITE TUFF BRECCIA	DACE FLOW	ANDESITE FLOW		
157	BASALT FLOW	BASALT TUFF	QTZ KERATOPHYRE TUFF	BASALT FLOW		
158	GRAPHITIC SHALE	RHYOLITE PYROCLASTICS	RHYOLITE FLOW	RHYOLITE FLOW		
159	BASALT TUFF	RHYOLITE TUFF	BASALT FLOW	RHYOLITE VOLCANICLASTICS		
160	BASALT FLOW	RHYOLITE CRYSTAL TUFF	RHYOLITE TUFF	DACE FLOW		
161	PILLON ANDESITE			SHALE		
162	SHALE					

## NUM | MINERALS

109   SPH,CPY
110   PYR,CPY,SPH,PO,MAG
111   CPY,PYR,PO,SPH,MAG,APY,CUB,MAR,AU,ILM,HEM,MAL,AZUR,LIM
112   PYR,SPH,CPY,GAL,PO,AP,CC,BOR,CU,AG,QTZ,CHL,SID
113   SPH,GAL,PYR,TETH,CPY,BOUL
114   PO,CPY,SPH
115   PYR,CPY
116   PYR,SPH,CPY,GAL
117   PO,PYR,SPH,CPY,APY,GAL
118   PYR,CPY,SPH,GAL
119   PYR,CPY,SPH,GAL
120   PYR,SPH,CPY,GAL,TETH,APY,AG,ELEC,QTZ,CHL
121   PYR,CPY,QTZ
122   PYR,SPH,CPY,ARG,AG,QTZ,CARB
123   PO,CPY,PR,SPH,GAL
124   PYR,CPY,PO,SPH,APY,MAG,CASS,QTZ
125   PYR,CPY
126   CPY,PYR,QTZ
127   PYR,CPY,SPH
128   MAG,PYR,PO,CPY
129   PYR,CPY,SPH
130   SPH,GAL,TETH,PYRG,PO,APY,CPY
131   PYR,CPY,SPH
132   PYR,CPY,SPH,GRN,QTZ,CALC,BAR
133   PYR,MAR,CPY,PO
134   PO,CPY,PR,SPH
135   PYR,SPH,CPY,PO,GAL,MAR
136   PYR,CPY,SPH,GAU
137   PYR,PO,CPY,SPH
138   PYR,SPH,GAL,CPY,PO,MAR,QTZ,CARB,CHL,GR
139   PYR,SPH,CPY,GAL
140   CPY,PYR,SPH,PO,CHL,CALC
141   PYR,CPY,SPH,GAL
142   PYR,SPH,CPY,GAL,TETH,TENN,APY,PO,BOUL,BOUR,MAG,GAH,QTZ,CARB,SER,CHL,CHLD,AND,GAR,KY,BIOT
143   CPY
144   PYR,CPY,SPH,GAL,APY,MAR,STAN,KOB,GUD,BI,PO,MACK,COV,MEN,MAG,HEM,ILM,RUT
145   PYR,PO,CPY,SPH,GAL,CUB,MACK,VALL,APY,MAG,ILM,RUT,MOLY,TETH,BOUR,AU,AG,SB,QTZ,CARB,BIOT,CHL,MUSC,HORN,KY,FELD,ANHY,SER
146   PO,SPH,CPY
147   PYR,CPY,SPH,GAL,APY,PO,CC,BOR,HEM,MAL,AZUR,GOE,ILL,CUP,QTZ,SER,CHL,AND
148   PYR,PO,SPH,GAL,CPY
149   CPY,PO
150   PYR,SPH,CPY,APY,MAG,GAL,FAH,ARG,PO,MAR,CUB,ELEC,SYL,TETD,ALT,ILM,QTZ,SER,CALC,CHL,EPID,TALC,ALB
151   PYR,CPY,SPH
152   PYR,PO,CPY,MAG,SPH,PLAG,HORN,GAR,QTZ,AP,EPID,DIOP,BIOT,GED,GAH,STAUR,CUM
153   PO,PYR,CPY,SPH,APY,AU,AG,GAL,HES,ILM,MAG,QTZ,ALB,BIOT,CHL,SER,MUSC,TALC,AMPH
154   PO,PYR,SPH,CPY,MAG,QTZ
155   PYR,SPH,GAL,CPY,APY,PO,MAR,BOR,CASS
156   PYR,CPY,SPH,GAL,PO,HAL
157   SPH,GAL,PYR,CPY,TETH,BOR,HEM,BAR,GYP,WJR,CHL
158   PYR,PO,CPY,SPH,GAL,CUB,MACK,VALL,APY,MAG,ILM,RUT,MOLY,TETH,BOUR,AU,AG,SB,QTZ,CARB,BIOT,CHL,MUSC,HORN,KY,FELD,ANHY,SER
159   SPH,CPY,GAL,PYR,TETH,BOR,ELEC,MAG,HEM,BAR,QTZ,SER,CHL
160   PYR,PO,SPH,CPY,APY,HAL
161   PYR,SPH,CPY,PO,MAG,QTZ,CHL
162   PYR,SPH,CPY,PO,MAG,QTZ,CHL

NUM	DISC	DEPOSIT-AGE	AREA	ORE TYPES				REFERENCES
				A	B	C		
109	1928	PROTEROZOIC			MASS		28,127	
110	1974	ARCHEAN			MASS,STR		119,215,287	
111	1953	PROTEROZOIC	0.31	0.27	MASS		59,287,353,367	
112	1974	PROTEROZOIC	0.07	0.06	MASS,STR		106,148,366,453	
113	1906	JURASSIC			DISS,STR		65	
114	1878	ORDOVICIAN			MASS,DISS		126	
115	<1933	CARBONIFEROUS			MASS		56,168	
116	1959	ORDOVICIAN	1.83	0.27	9E-04		42,65,257,287,360	
117	1914	PROTEROZOIC			MASS		28,87,109,127	
118	1878	ORDOVICIAN			MASS		126	
119	>1870	LOWER PALEOZOIC			DISS,MASS		126	
120	1947	ARCHEAN	0.14	0.1	7.59E-03		MASS,DISS,STR	
121	1926	ARCHEAN			VEIN		40,97,119,396	
122	1974	ARCHEAN			VEIN		8,65,99	
123	1956	ORDOVICIAN	0.01		MASS,DISS		16,99,382	
124	1935	PROTEROZOIC			MASS		16,65,117,127,128,256	
125	1929	PROTEROZOIC	4E-04		MASS,STR		28,65,117,127,128,287	
126	1935	JURASSIC			DISS		87,109,127	
127	1963	ARCHEAN	0.01		MASS		65	
128	1932	ARCHEAN			VEIN,DISS		65	
129	1932	ARCHEAN			MASS,DISS		65,287,374	
130	1922	JURASSIC			DISS,STR		65,206	
131	1977	PROTEROZOIC			MASS		65,127	
132	1918	DEVONIAN	0.14	0.03	MASS		211,241	
133	1944	ARCHEAN			MASS		133,318	
134	<1918	ARCHEAN	0.31	0.18	MASS		65	
135	1975	PROTEROZOIC			MASS,STWK,DISS		65,127	
136	1361	DEVONIAN			DISS		126	
137	1949	ARCHEAN			MASS,DISS		65	
138	1900	PROTEROZOIC			MASS		65,119,252,287,413	
139	<1899	CARBONIFEROUS			MASS		70,71,119,339,363,402	
140	<1899	ARCHEAN	1.85	0.08	MASS		251,327	
141	1865	ORDOVICIAN			MASS		65,82,133,337,435	
142	1970	ARCHEAN			MASS		66	
143	1974	PROTEROZOIC			MASS		65	
144	>1866	CARBONIFEROUS			MASS,STWK		56,230	
145	>1890	ORDOVICIAN	4E-03		MASS		37,119,272,320,393,428,452	
146	1947	PROTEROZOIC			MASS		287,353	
147	1968	PROTEROZOIC	0.73	0.24	0.02		75,87,127,216,218,287,314	
148		ORDOVICIAN			MASS,DISS		39	
149	1953	PROTEROZOIC			MASS		24,161	
150	1914	PROTEROZOIC	1.5	0.3	0.02		28,64,75,109,127,287	
151		ORDOVICIAN			MASS,DISS		389	
152	1969	SILURIAN			MASS		70,71,119,339,363,402	
153	1961	PROTEROZOIC	0.86	0.45	0.03		65,143,283,357	
154	1971	ARCHEAN			MASS		409	
155		CARBONIFEROUS			MASS		37,119,272,320,393,428,452	
156	1971	ARCHEAN			MASS		186,408	
157	1969	MIOCENE	0.19		MASS		39	
158	>1890	ORDOVICIAN	0.03		MASS,DISS,STR		65,182,192,242,244,373	
159	1934	MIOCENE	0.19		MASS		362,402	
160	1745	ORDOVICIAN			MASS,DISS,STR			
161	1956	ARCHEAN			MASS			
162	1970	CARBONIFEROUS			MASS			



## NUM | HOST ROCKS: SEQ=2

## SEQ=-1

## SEQ=-3

163	ARGILLITE	RHYOLITE TUFF FER CHERT	QTZ KERATOPHYRE RHYOLITE TUFF	RHYOLITE VOLCANICLASTICS	RHYOLITE BASALT	PILLOW BASALT	GABBRO
164		BASALT VOLC SEDIMENTS	RHYOLITE VOLC SEDIMENTS	QTZ KERATOPHYRE TUFF	RHYOLITE TUFF	BASALT FLOW	RHYOLITE CHERTY TUFF
165	GRAPHITIC SHALE	BASALT TUFF	BASALT TUFF	RHYOLITE TUFF	RHYOLITE TUFF	BASALT	
166	RHYOLITE TUFF	CHERT	ANDESITE	RHYOLITE TUFF	RHYOLITE BRECCIA	ANDESITE BRECCIA	
167				HORNBLENDITE	ANDESITE TUFF	SEDIMENTS	
168	FER CHERT	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF	BASALT	RHYOLITE TUFF
169		HORNBLENDE TUFF					
170		RHYOLITE TUFF					
171		FELSIC VOLC					
172		ARGILLITE					
173		BASALT					
174	QTZ KERATOPHYRE	BASALT	ANDESITE	RHYODACITE PYROCLASTICS	SILTSTONE	DACITE BRECCIA	
175	RHYOLITE TUFF	BASALT		RHYODACITE PYROCLASTICS	ANDESITE FLOW	ANDESITE FLOW	
176		ANDESITE			RHYOLITE TUFF	MUDSTONE	
177				FER CHERT	MUDSTONE	RHYOLITE FLOW	
178	RHYOLITE POR			ANDESITE FLOW	MUDSTONE	RHYOLITE FLOW	
179	RHYOLITE FLOW				RHYOLITE PYROCLASTICS	RHYOLITE FLOW	
180	RHYOLITE PUMICE TUFF				RHYOLITE BRECCIA TUFF	RHYOLITE PUMICE TUFF	
181	RHYOLITE PYROCLASTICS				PILLOW LAVA	PILLOW LAVA	
182	RHYOLITE PUMICE TUFF				DACITE	DACITE	
183	RHYOLITE FLOW				RHYODACITE PYROCLASTICS	RHYOLITE POR	
184					ARGILLITE	RHYOLITE POR	
185	VOLCANICLASTIC SEDIMENTS	DACITE PYROCLASTICS			ARGILLITE	RHYOLITE POR	
186	RHYOLITE POR	FER CHERT			ARGILLITE	RHYOLITE POR	
187	RHYOLITE POR	FER CHERT			RHYOLITE VOLCANICLASTICS	RHYOLITE POR	
188	RHYOLITE POR				RHYOLITE TUFF	BASALT	
189	BASALT	RHYOLITE VOLCANICLASTICS			RHYOLITE FLOW	RHYOLITE FLOW	
190	TUFFACEOUS SHALE	RHYOLITE TUFF			SPLILITE	SPLILITE	
191	SHALE	GRAYWACKE			RHYOLITE VOLCANICLASTICS	BASALT	
192		RHYOLITE VOLCANICLASTICS			ARGILLITE	ARGILLITE	
193	ARGILLITE	BASALT			DACITE PYROCLASTICS	CHL SCHIST	
194		RHYOLITE PYROCLASTICS			QTZ SER SCHIST	PILLOW BASALT	
195	CHL SCHIST	QTZ SER SCHIST			QTZ KERATOPHYRE AGGLOMERATE		
196	CHERT	QTZ KERATOPHYRE AGGLOMERATE			RHYOLITE TUFF	RHYOLITE BRECCIA	
197		RHYOLITE TUFF			RHYOLITE TUFF	RHYOLITE POR	
198		ANDESITE FLOW			RHYOLITE TUFF	GABBRO	
199	ANDESITE FLOW	RHYOLITE TUFF			RHYOLITE TUFF		
200		BASALT			DIABASE		
201	ARGILLITE	RHYOLITE			ANDESITE		
202	GRAYWACKE	RHYOLITE TUFF			RHYOLITE TUFF	DACITE TUFF	
203	ARGILLITE	RHYOLITE DEBRIS FLOW			RHYOLITE TUFF	ANDESITE TUFF	
204		ANDESITE TUFF			RHYOLITE TUFF	RHYOLITE TUFF	
205	RHYOLITE TUFF	RHYOLITE POR			RHYOLITE POR	RHYOLITE POR	
206	SPLILITE	RHYODACITE PYROCLASTICS			RHYODACITE PYROCLASTICS	DACITE	
207	ANDESITE FLOW	RHYOLITE TUFF			RHYOLITE TUFF	RHYOLITE TUFF	
208	RHYOLITE FLOW	RHYOLITE PYROCLASTICS			RHYOLITE AGGLOMERATE BRECCIA	DACITE FLOW	
209	RHYOLITE FLOW	RHYOLITE PYROCLASTICS			DACITE PYROCLASTICS	DACITE FLOW	
210	RHYOLITE FLOW	RHYOLITE PYROCLASTICS			RHYOLITE TUFF	RHYOLITE TUFF	
211	DACITE TUFF	ANDESITE TUFF			JASPER	BASALT TUFF	
212	RHYOLITE FLOW				BASALT TUFF	ANDESITE TUFF	
213	GRAPHITIC SHALE				MAFIC VOLC	MAFIC VOLC	
214	ANDESITE FLOW				CHERT	RHYOLITE BRECCIA	
215						RHYOLITE TUFF	
216	RHYOLITE CRYSTAL TUFF					RHYOLITE TUFF	

## NUMI MINERALS

163	PYR,PO,CPY,SPH,GAL
164	CPY,CPY
165	PYR,SPH,CPY,PO,GAL,CARB,TREM
166	PYR,PO,CPY,SPH,GAL,CUB,MACK,VALL,APY,MAG,ILM,RUT,MOLY,TETH,BOUR,AU,AG,SB,QTZ,CARB,BIOT,CHL,MUSC,HORN,KY,FELD,ANHY,SER
167	PYR,CPY,SPH,MAL,AZUR,CUP,CU,CC,QTZ
168	PYR,PO,CPY,SPH,MAG,QTZ,CALC
169	PYR,MAG,PO,CPY,SPH,GAL,APY,CUB,TENN,VALL,PENT,TEBI,GOE,HEM,MAL,AZUR,CC,COV,QTZ,CHL,TALC,DOL
170	PO,PYR,CPY,SPH,MOLY
171	PYR,CPY,GOE,HEM,QTZ
172	PYR,PO,CPY,SPH
173	PYR,PO,SPH,GAL,CPY,BOR
174	PYR,CPY
175	PYR,PO,MAG,SPH,CPY,GAL,AU,MOLY,CUB,HES,ALT,MAR,TEBI,ILM,MACK,VALL,ENG,JAR,QTZ,CALC,CHL,PLAG,HORN
176	PYR,PO,CPY,MAG,ILM,SPH,GAL,CHL,COR,QTZ,AND,BIOT,SER,ACT,TREM,ANTH
177	PYR,CPY
178	PYR,PO,SPH,GAL,CPY
179	PYR,CPY,PO,SPH,QTZ,CALC
180	PYR,CPY,SPH,GAL,BOR,COV,ENG,IDA,TETH,MAG,CC,HEM,S,QTZ,BAR,GYP
181	SPH,CPY,PYR,FAH,BOR,AU,BAR,QTZ
182	PYR,SPH,CPY,BOR,FAH,GAL,PO,CC,COV,MONT,BAR,QTZ,SER,CHL,FL,GYP
183	PYR,CPY,SPH,GAL
184	PO,PYR,SPH,APY,CPY,GAL,MAR,TETH,BOUL,BOUR,QTZ
185	PYR,SPH,GAL,CPY,TETH,ENG,BOR,COV,QTZ
186	PYR,SPH,GAL,CPY,PO,MAG,APY,MAR,BISM,BI,FRB,COB,ANGL,HEM,CHL,QTZ,MUSC,CALC,GR
187	PYR,SPH,GAL,CPY,PO,MAG,APY,MAR,BISM,BI,FRB,COB,ANGL,HEM,CHL,QTZ,MUSC,CALC,GR
188	PYR,SPH,GAL,CPY,PO,MAG,APY,MAR,BISM,BI,FRB,COB,ANGL,HEM,CHL,QTZ,MUSC,CALC,GR
189	PYR,CPY,SPH
190	PYR,SPH,GAL,CPY,QTZ,SER,RHOD,CHL,BAR
191	PYR,SPH,CPY,GAL,APY,CUP,CU,CARB
192	PYR,PO,SPH,CPY
193	CPY,PO,PYR,SPH,MAG,QTZ
194	PYR,PO,CPY,SPH,GAL
195	PYR,CPY,SPH,CC,COV,BOR,LIM,QTZ,SER,BAR
196	PYR,CPY,SPH,QTZ
197	PYR,CPY,SPH
198	PYR,MAR,SPH,CPY,PO,MAG,ELEC,HE,S,PET,SYL,KREN,CALV,ALT,TETD,TALC
199	PYR,CPY,SPH,GAL,APY,MOLY,MAG,ILM,QTZ,FELD,CALC,SER,CHL,TOUR,LEUC,FL
200	PYR,CPY,PO,SPH,GAL
201	PYR,SPH,CPY,GAL,QTZ,SER,CHL
202	PYR,PO,CPY,SPH,APY,STIB,TETH,BOR,QTZ,ANK,CHL,TALC,SER
203	PYR,CPY,SPH,GAL,PO,BOR,QTZ,CHL,BAR,GYP,TALC
204	PYR,SPH,GAL,CPY,APY,TENN,QTZ,CARB,SER,CHL
205	PYR,CPY,SPH,GAL,FAH,MAG,HEM,GRN,PO,ILM,CC,COP,S,MAGH,COV,MAL,AZUR,QTZ,CALC
206	PYR,SPH,CPY
207	PO,PYR,CPY,SPH,QTZ,SER
208	PYR,CPY,GAL,QTZ,CALC
209	SPH,PYR,GAL,CPY,LUZ,TETH,CHL,SER,QTZ,GYP,MONT,CALC
210	SPH,PYR,GAL,CPY,LUZ,TETH,CHL,SER,QTZ,GYP,MONT,CALC
211	SPH,CPY,PYR,PO,GAL,TETH,POLY,MAG,GAH,QTZ
212	PYR,CPY,SPH,GAL,APY,ALT,SYL,COL,KREN,AU,TETH,CASS,COB,MAR,MAL,ELEC,APY,PO,MAG,ILM,STAN,CUB,MACK,TEBI,CALC,DOL,SID,JAS,QTZ,MUSC,AP,EPID,FL
213	PYR,PO,CPY,SPH,GAL,CUB,MACK,VALL,APY,MAG,ILM,RUT,MOLY,TETH,BOUR,AU,AG,SB,QTZ,CARB,BIOT,CHL,MUSC,HORN,KY,FELD,ANHY,SER
214	PYR,PO,CPY,SPH,QTZ,CHL
215	PO,PYR,CPY,SPH
216	PYR,CPY,SPH,TENN,GAL,PO,MAG,SPEC,APY,CC,BOR,COV,LIM,AG,AZUR,MAL

NUM	DISC	DEPOSIT-AGE	AREA	A	B	C	ORE TYPES	REFERENCES
163	1911	SILURIAN JURASSIC					MASS,DISS	400
164	1956	PROTEROZOIC	0.38				DISS,STR	65
165	1860	ORDOVICIAN	0.38				MASS	87,109,127,128,314,356
166	1881	CAMBRIAN	0.5	0.23			MASS,DISS	37,119,272,320,393,428,452
167	1909	ORDOVICIAN	0.06				MASS,DISS	386
168	1971	ARCHEAN	0.5				MASS,STWK	115,217,239,289,431
169	1947	PROTEROZOIC					MASS	13,251,327,388,459
170	1892	JURASSIC					MASS	65
171	1929	ARCHEAN	0.18	0.05			MASS	1223
172	1975	TRIASSIC	0.02				DISS,MASS	65
173	174	SILURIAN					MASS,STR,DISS	34,98
175	1905	ORDOVICIAN	0.43	0.21			MASS,DISS	39
176	1955	CRETACEOUS	0.25				MASS	119,305
177	1926	ORDOVICIAN					MASS,STR	65,95,307,390,424
178	1885	ARCHEAN					MASS,DISS	248
179	1885	PROTEROZOIC					MASS	117,65,92
180	1963	MIocene	0.86				DISS,MASS	65,97,245
181	1962	MIocene	4.99E-03				MASS	72,198,358,407
182	1928	ORDOVICIAN	0.01	0.15			MASS	188,98,291,294,359,407
183	1953	CRETACEOUS					MASS	197,293
184	1953	ORDOVICIAN	0.43	0.15			MASS	65
185	1953	PROTEROZOIC					MASS	58,59,76,92
186	1953	CRETACEOUS					MASS	247,248,306
187	1953	ORDOVICIAN	0.43				MASS,STR	57,140,257,436,445,446
188	1953	PROTEROZOIC					MASS	57,140,237,238,257,436,445,446
189	1894	ORDOVICIAN					MASS	39
190	1892	CAMBRIAN					MASS	2,56,325
191	1922	CARBONIFEROUS	0.4	0.11	0.04		MASS	56,161
192	1902	ORDOVICIAN					MASS	53
193	1956	JURASSIC					MASS	65,282
194	1956	ARCHEAN					MASS,DISS,STR	65,92
195	1935	PALEOZOIC					MASS	52,207,212,454
196	1660	ORDOVICIAN	0.06	0.04	0.03		MASS,DISS,STR	147
197	1972	ARCHEAN					MASS	276,287
198	1920	PROTEROZOIC					MASS,DISS,STR	62,65,133,287,315,355,396
199	1928	ARCHEAN	0.95				STR	65,97
200	1865	ORDOVICIAN					MASS,DISS	65,435
201	1979	PERMIAN					MASS	444
202	1925	ARCHEAN					MASS,DISS	28,65,164,392
203	1897	PERMIAN	0.42				STR	194
204	1880	PROTEROZOIC	0.02				MASS,STR	16,136,183,330
205	1895	DEVONIAN	0.24				MASS,DISS	208,211,241
206	1901	CRETACEOUS					STR	220,247,248
207	1972	ARCHEAN					MASS	65,259,357
208	1957	PROTEROZOIC					MASS,STWK	248,306,434
209	1951	MIocene	4.99E-03				MASS,STWK	280
210	1951	MIocene	0.02				MASS	65,276
211	1973	ARCHEAN					MASS,STWK,DISS	89,340,349
212	1965	PROTEROZOIC					MASS	37,119,272,320,393,428,452
213	>1890	ORDOVICIAN	0.17				MASS,DISS,STR	64,287,317
214	1967	ARCHEAN	0.46	0.06			MASS	126
215	>1850	PROTEROZOIC					MASS,STR	15,41,84,321,330
216	1876	PROTEROZOIC						

NUM	HOST ROCKS: SEQ#	SEQ#-1	SEQ#--1	SEQ#---1
217	BASALT VOLC SEDIMENTS	RHYOLITE VOLCANICLASTICS		
218	RHYOLITE FLOW	RHYOLITE TUFF	RHYOLITE FLOW	BASALT FLOW
219		BASALT FLOW		
220		GRAPHITIC ARGILLITE		
221		RHYOLITE		
222		RHYODACITE PYROCLASTICS		
223	RHYOLITE TUFF	RHYOLITE AGGLOMERATE		
224	RHYOLITE FLOW	RHYOLITE TUFF BRECCIA		
225	SHALE	KERATOPHYRE TUFF		
226		PILLOW BASALT		
227		QTZ KERATOPHYRE TUFF		
228		RHYOLITE BRECCIA		
229	BASALT ASH FLOW	FER CHERT		
230	RHYOLITE POR	IRHYOLITE TUFF		
231	ANDESITE	ANDESITE TUFF		
232		DACITE TUFF		
233	RHYOLITE CHERTY TUFF	RHYOLITE WELDED TUFF		
234	RHYOLITE POR	IRHYOLITE TUFF		
235		RHYOLITE PYROCLASTICS		
236		QTZ KERATOPHYRE TUFF		
237		RHYOLITE TUFF		
238		RHYOLITE VOLC SEDIMENTS		
239	RHYOLITE FLOW	OLIVINE BASALT		
240		PILLOW BASALT		
241		RHYOLITE PYROCLASTICS		
242		FER CHERT		
243	RHYOLITE TUFF	ANDESITE FLOW		
244	RHYOLITE TUFF	QTZ KERATOPHYRE TUFF		
245		DACITE FLOW		
246	MUDSTONE	DACITE FLOW		
247		DACTITE FLOW		
248	DACTITE TUFF	DACTITE FLOW		
249	PERLITIC TUFF	DACTITE FLOW		
250	GRAWMACKE	BASALT TUFF		
251	GRAWMACKE	BASALT TUFF		
252		RHYOLITE TUFF		
253		SEDIMENTS		
254	BASALT FLOW	DACTITE TUFF BRECCIA		
255	SPLILITE	RHYODACITE TUFF		
256		PILLOW BASALT		
257	RHYOLITE TUFF	SHALE		
258		RHYOLITE TUFF		
259	JASPER	QTZ KERATOPHYRE		
260	RHYOLITE TUFF	GRAPHITIC SHALE		
261	SPLILITE FLOW	SEDIMENTS		
262	PILLOW ANDESITE	RHYOLITE CHERTY TUFF		
263		QTZ KERATOPHYRE TUFF		
264	DACTITE TUFF	QTZ KERATOPHYRE TUFF		
265	SHALE	QTZ KERATOPHYRE TUFF		
266		MAFIC VOLC		
267	CHERT	PILLOW BASALT		
268		GRAPHITIC ARGILLITE		
269	QTZ KERATOPHYRE	GRAPHITIC SHALE		
		RHYOLITE PYROCLASTICS		

## MINERALS

217	PYR,CPY,PO
218	PYR,CPY
219	PYR,CPY,PO,SPH
220	PYR,PO,CPY,SPH
221	PYR,SPH,CPY
222	PYR,CPY
223	PYR,PO,SPH,CPY,GAL,QTZ,CARB
224	PYR,SPH,CPY,GAL,FAH,MAR,CC,COV,MAL,QTZ,BAR,FELD;SER,CHL,CARB
225	PO,PYR,SPH,CPY,GAL,APY
226	PYR,CPY
227	PYR,SPH,PO,CPY,GAL,APY
228	PYR,SPH,CPY
229	PYR,SPH,GAL,CPY,PO,CARB,SER
230	PYR,CPY,SPH
231	PYR,CPY,QTZ,CHL,SER
232	PYR,SPH,GAL,CPY,LIM
233	PYR,CPY,SPH,CUB,TELL,MAG,TETH,BOR,HEM,PYL,PSIL,CALC,DOL,CH,CHL
234	PYR,SPH,CPY,GAL,PO,MAG,ACN,FAH,STROM,MAR,APY,DIG,CC,COV,BOR,AG,ENG,PYRG,CASS,STAN,RUT,COB,STND,ELEC,BI,BISM,QTZ,CALC,ALB,DOL,SER,CHL,TOUR
235	PYR,SPH,CPY,PO,GAL,APY,TETH,BOR,MACK,MOLY,QTZ,MUSC
236	CPY,PYR,PO,SPH
237	PYR,PO,SPH,CPY,GAL
238	SPH,CPY,PYR,GAL,TETH,PO,FAH,ENG,COV,BOR,HEM,QTZ,BAR
239	PYR,CPY
240	PYR,CPY,SPH,MAR,PO,COV,DIG,CC,BOR,QTZ
241	PYR,CPY,HEM,S
242	SPH,PYR,TETH,GAL,CPY,BOR,REAL,CC,COV,MAL,AZUR,CER,LIM,QTZ,CHD,OPAL,BAR
243	SPH,CPY,GAL,PYR,BAR,QTZ,GYP
244	SPH,CPY,GAL,PYR,TETH,ELEC,BOR,AZUR,CC,ARG,BAR,QTZ,GYP,SER,CHL
245	PYR,CPY,SPH,GAL,FAH,QTZ,CALC
246	PYR,CPY,SPH,MAG,GAL,TETH,BI,MOLY,MAR,PO,VALL,APY,ARG,COV,DYS,CU,AU,AG,GR,CC,ILM,CHL,SER,TALC,QTZ,AP,REM,TOUR,BAR,CALC,DOL,FL,ZIR,ACT
247	SPH,GAL,CPY,PYR,BAR
248	SPH,GAL,CPY,PYR,BAR
249	SPH,GAL,CPY,PYR,BAR
250	PYR,CPY,SPH,GAL,BOR,MAL,AZUR,CC,COV,LIM,QTZ
251	PYR,CPY,SPH,GAL,BOR,MAL,AZUR,CC,COV,QTZ
252	PYR,CPY,SPH,GAL,GYP
253	PYR,CPY,SPH,BOR
254	PYR,CPY,SPH,GAL,HEM,BAR,GYP
255	PYR,CPY,SPH,GAL,TENN,ENG,FAH,NEO,CC,COV,BOR,QTZ,CALC,BAR,STD
256	PYR,SPH,CPY
257	PYR,GAL,SPH,CPY,APY
258	PYR,CPY
259	PYR,CPY,SPH,GAL,MAR,APY,CASS,QTZ,CALC,BAR,AP
260	PYR,SPH,CPY,GAL,CARB
261	PYR,CPY,SPH,GAL,TETH,MAR,TENN,TETD,ENG,BOR,CC,COV,QTZ,SER,DIASPORE,BAR
262	PYR,SPH,CPY,MAR,PO,ARG,GAL,MAG,CC,CUB,DYS,MACK,STAN,QTZ,CHL,SER,GAR,BIOT,ANTH,CALC
263	PYR,CPY
264	PYR,SPH,GAL,CPY
265	PYR,SPH,CPY,APY
266	BOR,CPY,PYR,CC,QTZ
267	PYR,CPY,SPH,BOR,CC,GOE,HEM,JAR,QTZ,GYP,CHL
268	PYR,CPY,SPH,GAL,BAR,QTZ,CALC
269	PYR,PO,SPH,CPY,GAL,MOLY,APY,GUD,FAH,BOUL,JAM,ACN,BOUR,HES,MAG,ILM,MACK,VALL,COV,BOR,HEM,CUB,CHL,SER,RUT
270	PYR,SPH,CPY,GAL



NUM	DISC	DEPOSIT-AGE	AREA	A	B	C	Ore Types	REFERENCES
217	1943	PROTEROZOIC					MASS	65, 87, 127, 128
216	1925	ARCHEAN	0.04				VEIN	8, 97, 119, 435
219	1911	ORDOVICIAN					MASS	119, 124, 217, 289, 431
220	1967	ARCHEAN					MASS	65
221	1958	ARCHEAN					MASS, DISS	65
222	222	CRETACEOUS					MASS	248
223	1926	ARCHEAN	0.17				MASS, STR	287, 317
224	1913	MIOCENE	0.3	0.07	0.02		MASS	231
225	1915	PROTEROZOIC					MASS	150, 328
226	1965	CRETACEOUS		0.4	0.02		MASS, STWK	32, 421
227	<1965	PROTEROZOIC		0.8	0.4		MASS	150
228	1963	ARCHEAN		0.61	0.46	0.06	DISS, STR	65
229	1880	ORDOVICIAN					MASS, DISS	44, 65, 119, 189, 256, 436
230	>1900	DEVONIAN					MASS	211, 241
231	1861	JURASSIC		0.37	0.11	0.01	MASS, STR	170, 171, 322
232	232	PERMIAN					MASS	301
233	1966	PROTEROZOIC					MASS, STR	83, 410
234	1963	ARCHEAN		1.25	0.24	0.08	MASS, STR	287, 317, 353, 414, 438
235	1674	ORDOVICIAN	0.03				MASS	53, 110, 145, 342
236	<1965	PROTEROZOIC	1E-03				MASS, DISS	150
237	1958	SILURIAN					MASS, DISS	400
238	1958	CRETACEOUS					STR, DISS, MASS	248, 306, 434
239	1973	PROTEROZOIC					MASS	127
240	1953	CRETACEOUS					MASS, STWK	80, 309, 421
241	1951	CRETACEOUS	0.31	0.11	0.09		MASS, STWK, DISS	421
242	1966	CRETACEOUS		0.3	0.13	0.08	MASS, STWK, STR, DISS	248, 306, 433, 434
243	1861	MIOCENE		0.7	0.3	0.12	MASS	72, 296
244	1959	MIOCENE	0.33				MASS, DISS	72, 224, 296
245	<1968	CRETACEOUS					DISS, STWK, VEIN	248, 306, 434
246	1918	PROTEROZOIC	0.01				MASS, DISS	103, 150, 151, 328
247	1907	MIOCENE	0.04				MASS	290
248	1969	MIOCENE	0.05				MASS, STWK	290
249	1906	MIOCENE	0.08				MASS, STWK	290
250	1939	JURASSIC		0.1	0.03	0.02	MASS	25, 38, 158, 159, 248, 404
251	1000	JURASSIC		0.12	0.09	0.04	MASS	25, 38, 158, 248, 404
252	1650	MIOCENE	0.04				MASS, DISS	167, 277
253	1972	PERMIAN					DISS, MASS	65, 302
254	<1971	CRETACEOUS		0.15	0.06	0.04	MASS, DISS, STWK	60, 306
255	1912	CRETACEOUS		0.25	0.25	0.02	MASS, DISS	32, 182, 209, 421
256	1950	CARBONIFEROUS		1.5	0.07	0.05	MASS	56, 230
257	<1968	CARBONIFEROUS					MASS, STWK	168
258	<1933	CARBONIFEROUS					MASS, STWK	56, 117, 239, 450
259	-1500	CARBONIFEROUS		0.9	0.35	0.15	MASS, STWK	56, 230
260	>1866	CARBONIFEROUS					MASS, DISS, STR	158, 222, 232, 248, 306, 434
261	1956	CRETACEOUS		1.5	0.5	0.04	MASS, DISS	8, 64, 119, 351, 353, 396
262	1937	ARCHEAN-CARBONIFEROUS		0.15	0.05	4.9E-03	MASS	56
263	1937	PROTEROZOIC					MASS	150, 328
264				3.46E-03			MASS	150
265	1926	PROTEROZOIC		3.59E-03			VEIN	419, 454
266	<1939	EOC-PLIO					MASS, STWK	4, 77, 270
267	1973	CRETACEOUS					MASS	45, 47, 65
268	1897	PERMIAN					MASS, DISS	1400, 431
269	<1966	PROTEROZOIC					MASS, DISS	39, 115, 431
270	1865	SILURIAN						



NUM	HOST ROCKS:	SEQ=1	SEQ=2	SEQ=-1	SEQ=-2	SEQ=-3
271		BASALT FLOW	DIABASE DIKES			
272	RHYOLITE TUFF	RHYOLITE	ANDESITE	DIABASE DIKES		
273	BASALT VOLCANICLASTICS	FER CHERT	PILLOW BASALT	PILLOW BASALT		
274	BASALT	CHERT	QTZ KERATOPHYRE			
275	BASALT	SHALE	SHALE			
276	MANG CHERT	MUDSTONE	PILLOW BASALT			
277	TUFFITIC CHERT	RHYOLITE	RHYOLITE			
278		CARBONACEOUS SHALE	CARBONACEOUS SHALE			
279		RHYOLITE TUFF	RHYOLITE TUFF			
280	ANDESITE FLOW	RHYOLITE AGGLOMERATE	RHYOLITE AGGLOMERATE			
281	ANDESITE FLOW	RHYOLITE PYROCLASTICS	RHYOLITE PYROCLASTICS			
282	ANDESITE FLOW	RHYOLITE TUFF	RHYOLITE TUFF			
283		GRAPHITIC ARGILLITE	GRAPHITIC SHALE			
284	BASALT FLOW	DACITE PURICE TUFF	GRAPHITIC SHALE			
285		VOLC	DACITE TUFF			
286		BASALT	BASALT			
287		RHYOLITE TUFF	RHYOLITE FLOW			
288		RHYOLITE TUFF	RHYOLITE POR			
289		ANDESITE VOLCANICLASTICS	ANDESITE BRECCIA			
290	LIMESTONE	DACITE PYROCLASTICS	ANDESITE			
291	CHERTY LIMESTONE	RHYOLITE TUFF	RHYOLITE TUFF BRECCIA			
292		CHERTY TUFF	PILLOW BASALT			
293	RHYODACITE	RHYOLITE FLOW	CHERTY RHYOLITE			
294	RHYODACITE TUFF	CHERT	RHYODACITE TUFF			
295	OLIVINE BASALT	FER MUDSTONE	PILLOW BASALT			
296		BASALT	BASALT			
297	RHYOLITE FLOW	FER CHERT	ARGILLITE			
298	ANDESITE TUFF	ANDESITE PYROCLASTICS	RHYOLITE TUFF			
299		ANDESITE FLOW	RHYOLITE AGGLOMERATE			
300	BASALT	QTZ MICA SCHIST	QTZ MICA SCHIST			
301	RHYOLITE TUFF	RHYOLITE POR	RHYOLITE TUFF			
302	GRAYWACKE	RHYOLITE POR	RHYOLITE TUFF			
303		RHYOLITE TUFF	RHYOLITE TUFF			
304	SHALE	RHYOLITE TUFF	RHYOLITE TUFF			
305		FELSIC VOLC	FELSIC VOLC			
306		RHYOLITE TUFF	RHYOLITE TUFF			
307	ANDESITE FLOW	RHYOLITE AGGLOMERATE	RHYOLITE AGGLOMERATE			
308	RHYOLITE TUFF	RHYOLITE FRAGMENTAL	RHYOLITE FRAGMENTAL			
309	RHYOLITE FLOW	ANDESITE BRECCIA	ANDESITE BRECCIA			
310		RHYOLITE TUFF	KERATOPHYRE			
311		BASALT	BASALT			
312		RHYOLITE TUFF	RHYOLITE FLOW			
313	RHYOLITE TUFF	SILTSTONE	RHYOLITE TUFF			
314	VOLC SEDIMENTS	LIMBURGITE	PILLOW BASALT			
315	HORN ANDESITE	RHYOLITE QTZ POR	RHYOLITE CRYSTAL TUFF			
316		TUFF	RHYOLITE QTZ POR			
317	BASALT FLOW	RHYOLITE PYROCLASTICS	BASALT FLOW			
318	CHERT	DACITE TUFF	RHYOLITE PYROCLASTICS			
319	BASALT FLOW	CHERT	DACITE TUFF			
320	SILTSTONE	ANDESITE FLOW	CHERT			
321	CHERT	ARGILLITE	ANDESITE FLOW			
322	ANDESITE TUFF	SHALE	ARGILLITE			
323	ANDESITE	FER CHERT	KERATOPHYRE TUFF			
324	RHYOLITE FLOW		GRAPHITIC ARGILLITE			

## NUM | MINERALS

271	PYR,CPY,SPH,COV,QTZ,CHL
272	PYR,SPH,CPY
273	PYR,CPY,MAR,MAG,PO,MAR,COV,AS,QTZ,CALC,EPID,SID
274	PYR,CPY,SPH,MAG,PO,BOR,QTZ,CALC,CHL
275	PYR,CPY,PO,SPH,GAL,APY,TETH,MAG,HEM,HEM,ILM,AP,BAR,CARB
276	COPY,SPH,HEM,CHR,AZUR,CUP,CU,BOR,CC,COV,LIM,CALC
277	COPY,SPH,GAL
278	PYR,CPY,SPH,GAL,PO,BAR,QTZ
279	PYR,CPY,SPH,TEFD,TELL,COB,MOLY,BOR,DIG,QTZ,CHL,SER,MUSC,RUT
280	PYR,CPY,PO,SPH,GAL,BRC,C,JAR,QTZ,DOL,TALC
281	PYR,CPY,SPH
282	SPH,PYR,PO,CPY,GAL,FAH,APY,MAG,QTZ
283	PO,PYR,SPH,CPY,GAL
284	PYR,SPH,CPY,GAL,FAH,BOR,PO,COV,QTZ,GYP,BAR,CALC,CHL,OPAL,ANHY
285	PYR,CPY
286	PYR,CPY
287	SPH,APY,CPY
288	PYR,CPY,SPH,GAL,GRN,TEFH,COV,HEM,QTZ,SER,CHL,CALC,BAR
289	PYR,SPH,CPY
290	PYR,ENG,LUZ,CPY,TENN,HEs,CALV,KREN,AU,SPH,CC,COV,QTZ,KAOL,BAR,ALUN,SPHENE,LEUC
291	PYR,CPY
292	PYR,SPH,CPY,PO,COV,DIG,LIM,JAR,GOE,MAGH,JAS,CHD,QTZ,CHL,MONT,CALC,GYP,SID,ILL
293	PYR,SPH,CPY,GAL,FAH,APY,BOUL,BOUR,MAG,GAH,QTZ,CARB,SER,CHL,CHLD,AND,GAR,KY,BIOT
294	PYR,SPH,PO,MAG,CPY,GAL,APY,HEM,QTZ,CHL,ACT,TALC,CALC,SER,BIOT
295	PYR,CPY,SPH
296	CPY,PYR,PO,QTZ,CARB
297	PYR,PO,CPY,SPH,GAL,SER,CHL,QTZ
298	PO,PYR,SPH,CPY,GAL,BOUL,FAH,AND,GEo,MAR,APY,AU,AG,CARB
299	PYR,PO,CPY,MAG,ILM,QTZ,CARB
300	PYR,CPY,SPH,GAL
301	PO,PYR,SPH,CPY,MAG,APY,MACK,GAH,QTZ,CHL,SER,EPID,ALB,AND,BIOT,CALC,MUSC
302	PYR,SPH,CPY
303	PYR,SPH,GAL,CPY,MAG,CUB,VALL,GUD,ULL,TETH,JAM,BOUL,MOLY,BIRTH,HES,DYS,AU,BAR,QTZ,FELD,HORN,EPID,CALC
304	PYR,SPH,GAL,CPY,APY,PO,MAR,BOR,CASS
305	PYR,PO,CPY,SPH
306	PO,SPH,CPY,GAL,TREM,ACT
307	PYR,CPY,SPH,GAL
308	SPH,GAL,CPY,PYR,TETH,MAL,CER,CHR,AZUR,CHD,CHL,SID
309	CPY,SPH,PYR
310	PYR,SPH,CPY,GAL
311	PO,CPY,MAG,SPH,CUB,PYR,VALL,BOUL,MOLY,MAR,QTZ,HORN,ANTH,CARB
312	PYR,SPH,CPY,GAL,PO,MAG,TENN,CC,QTZ,CHL,BAR
313	PYR,PO,SPH,CPY,PO,TETH,QTZ,CHL
314	PYR,MAR,CPY,SPH,PO,COV,BOR,DIG,CC,HEM,GOE,JAS,OPAL,QTZ,CHL,CHL
315	PYR,CPY,BOR,SPH,GAi,CC,CU,QTZ,BAR
316	PYR,CPY,PO,MAG,SPH,GAL,APY,BISM,BOR,BRC,CALV,CASS,CC,COl,COV,CUB,DIG,CU,HEs,MOLy,PET,TEBi,TETh,MAl,AzUR,CT,QTz
317	PO,CPY,SPH,GAL,PYR,LIM,CHR,QTZ
318	PYR,CPY,BOR,FAH,SPH,GAL,ENG,MAG,MOLy,HEM,BOR,CC,DIG,COV,CU,LIN,STROM,QTZ,CHL,SID,BAR,SEr,RUT,STND,CALC,AP,FL,ZIR
319	PYR,SPH,GAL,CPY
320	PYR,SPH,GAL,CPY
321	PYR,SPH,CPY,GAi,FAH,STROM,BOR,COV,DIG,QTZ,SEr,CHL,TALC,CALC,BAR,CH,JAS
322	PYR,CPY,BOR,ILM,RUT,MAi,AZUR,CUP,AND,QTZ,CHL,CHL
323	PYR,SPH,PO,CPY,APY,GAL,TETH,MAg
324	PYR,SPH,GAL,CPY,PO,QTZ,CARB

NUM	DISC	DEPOSIT-AGE	AREA	A	B	C	Ore Types	REFERENCES
271	-3000	CRETACEOUS					STWK	32,368,421
272	1968	ORDOVICIAN					MASS	65
273	1877	ORDOVICIAN	1.6E-03				MASS,DISS,STR	95,114,246,390,391
274	1654	ORDOVICIAN	3.77	0.22	0.03		MASS,DISS,STR	53,119,124,147,213,430,439
275	<1921	CARBONIFEROUS					MASS,DISS,STWK	20,56,230
276	1958	EOCENE	1				MASS	190
277	1974	PROTEROZOIC					MASS	28,92,109,128
278	1966	CARBONIFEROUS	0.54				MASS,DISS,STWK	70,117,339,401,402
279	1968	ARCHEAN	2.99E-04				MASS	64,154,287,316,397,398
280	1926	ARCHEAN					MASS,STR	65,81,348
281	1959	ARCHEAN					MASS,DISS	65
282	1971	ARCHEAN	4.99E-03	0.21	2.7E-03		MASS,STR	64,163,319,357
283	1958	PROTEROZOIC	0.43	0.43	0.14		MASS,DISS	65,127
284	1967	CRETACEOUS	0.7	0.43			MASS,STWK,DISS	10,60,202,269,306,434
285	<1953	TERTIARY					MASS	86,419,454
286		ORDOVICIAN					DISS	39
287	1911	JURASSIC	0.11				DISS,STR	65,206
288	>880	DEVONIAN					MASS	210,241
289	1916	PROTEROZOIC					MASS	28,50,127
290	1860	EOC PLIO	0.08				MASS,DISS,STR	139,454
291	>936	EOC PLIO					MASS	454
292	1937	CRETACEOUS	0.04	0.2	0.09	0.03	MASS,STWK	73,79,80,182,368,421
293	1969	ARCHEAN					MASS,STR	118,145,297
294	1956	ARCHEAN					MASS,DISS,STWK	133,214,318,332,333,334
295	-3000	CRETACEOUS					MASS,DISS,STWK	182,368,421
296	1951	ARCHEAN					MASS,STR	65,141
297	1967	ORDOVICIAN	5E-05				MASS,DISS	189
298	1946	PROTEROZOIC					MASS,STR	119,187,426
299	1937	ARCHEAN					MASS,DISS	97,160,264,348,435
300	>870	ORDOVICIAN					MASS,DISS	126
301	1966	ARCHEAN					MASS,DISS,STR	356,380,396
302	1955	ARCHEAN					MASS	65,133,182,396,435
303	>1500	ORDOVICIAN		0.31	0.18	0.02	MASS,DISS	39,53,346,431
304		CARBONIFEROUS	0.07				MASS	70,71,19,339,363,402
305	1969	PRECAMBRIAN					MASS	65
306	1961	ARCHEAN					MASS,DISS	65,281
307	1945	ARCHEAN					MASS,STR	65
308	1897	ARCHEAN		0.4	0.27	0.02	MASS,DISS	251,263,387
309	1926	ARCHEAN					MASS	65,176
310		CAMB ORD					MASS	39
311	1898	CAMB SIL	0.02				MASS,DISS,STR	429
312	1942	ORDOVICIAN					MASS,DISS,STR	65,166,337,435
313	1896	SILURIAN					MASS,DISS,STR	44
314	1927	CRETACEOUS					MASS,DISS,STR	1,32,79,182,368,421
315	1860	PERMIAN					MASS,DISS	120,121
316	1882	DEVONIAN	0.13				DISS,STR	251
317	<1954	ARCHEAN					MASS,DISS,STR	119,323,324,331
318	1884	CAMERIAN					DISS,STWK	9,60,202,220
319	1936	CRETACEOUS					MASS	64,112,189
320	1956	ORDOVICIAN					MASS,DISS,STR	46,371,437
321	1919	PERMIAN					MASS,STR,DISS	170,71,322
322	1861	JURASSIC	9.99E-04	0.24	0.03	0.01	MASS,DISS	150,328
323	<1960	PROTEROZOIC	3.5E-03				MASS	65,92,189,354
324	1956	ORDOVICIAN	0.01					



NUM	HOST ROCKS: SEQ=2	SEQ=-1	SEQ=-2	SEQ=-3
325	ANDESITE FLOW	FELSIC VOLC	RHYOLITE FLOW	RHYOLITE FLOW
326	ANDESITE TUFF	ANDESITE CHERTY TUFF	RHYOLITE TUFF	RHYOLITE TUFF
327	RHYOLITE FLOW	FER CHERT	DACITE BRECCIA	DACITE BRECCIA
328	BASALT FLOW	RHYOLITE TUFF	BASALT FLOW	BASALT FLOW
329	CHERT	BASALT FLOW	CHERT	CHERT
330	BASALT FLOW	RHYOLITE AGGLOMERATE	RHYOLITE TUFF	RHYOLITE FLOW
331	RHYOLITE TUFF	RHYOLITE TUFF	PILLOW BASALT	RHYOLITE FLOW
332	RHYOLITE FLOW	RHYOLITE TUFF	ANDESITE AGGLOMERATE	ANDESITE FLOW
333	ANDESITE BRECCIA	RHYOLITE TUFF	ANDESITE FLOW	RHYOLITE TUFF BRECCIA
334	RHYOLITE TUFF	BASALT	RHYOLITE CRYSTAL TUFF	RHYOLITE TUFF BRECCIA
335	BASALT	RHYOLITE TUFF BRECCIA	GABBRO	RHYOLITE FLOW
336	ANDESITE POR	JASPER	RHYOLITE TUFF BRECCIA	RHYOLITE TUFF BRECCIA
337	BASALT TUFF	QTZ KERATOPHYRE TUFF	PILLOW BASALT	RHYOLITE FLOW
338	RHYOLITE FLOW	ANDESITE FLOW	RHYOLITE FLOW	RHYOLITE FLOW
339	MAFIC VOLC	MAFIC VOLC	MAFIC VOLC	MAFIC VOLC
340	ANDESITE	PILLOW ANDESITE	ANDESITE	BASALT FLOW
341	SEDIMENTS	MAFIC VOLC	RHYOLITE CHERTY TUFF	RHYOLITE FLOW
342	RHYOLITE TUFF	ANDESITE TUFF	MAFIC VOLC	RHYOLITE FLOW
343	ARGILLITE	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE FLOW
344	MUDSTONE	RHYOLITE LAPILLI TUFF.	RHYOLITE SANDY TUFF	RHYOLITE FLOW
345	CHERT	QTZ KERATOPHYRE TUFF	QTZ KERATOPHYRE TUFF	QTZ KERATOPHYRE TUFF
346	FER CHERT	PILLOW BASALT	PILLOW BASALT	SERPENTINITE
347	RHYOLITE TUFF	GRAPHITIC ARGILLITE	GRAPHITIC ARGILLITE	DACITE BRECCIA
348	GRAPHITIC SHALE	IRHYOLITE POR	IRHYOLITE BRECCIA	IRHYOLITE POR
349	LIMESTONE	CHERT	IRHYOLITE TUFF	SHALE
350	RHYOLITE FLOW	RHYOLITE TUFF	IRHYOLITE TUFF BRECCIA	CHERT
351	RHYOLITE FLOW	RHYOLITE FLOW	INTERMEDIATE VOLC	DACITE FLOW
352	SHALE	IRHYOLITE	QTZ KERATOPHYRE	ANDESITE
353	SEDIMENTS	IRHYOLITE	IRHYOLITE	DACITE FLOW
354	ANDESITE TUFF	IRHYOLITE TUFF	ANDESITE TUFF	ANDESITE LAPILLI TUFF
355	ANDESITE POR	ANDESITE POR	RHYOLITE TUFF	RHYOLITE POR
356	RHYOLITE	PILLOW BASALT	RHYOLITE	RHYOLITE
357		PILLOW BASALT	PILLOW BASALT	PILLOW BASALT
358	SHALE	JASPER	IRHYOLITE TUFF	DACITE FLOW
359	INTERMEDIATE VOLC	INTERMEDIATE VOLC	IRHYOLITE TUFF	IRHYOLITE TUFF
360	GRAYWACKE	RHYOLITE TUFF	RHYOLITE FLOW	PILLOW BASALT
361	ARGILLITE	RHYOLITE TUFF	RHYOLITE TUFF	ANDESITE
362	LIMESTONE	RHYOLITE TUFF	RHYOLITE TUFF	DACITE FLOW
363	SHALE	PILLOW BASALT	PILLOW BASALT	PILLOW BASALT
364	RHYOLITE TUFF	CHERT	IRHYOLITE BRECCIA	IRHYOLITE
365	CHERT	RHYOLITE TUFF	IRHYOLITE FLOW	RHYOLITE
366	SHALE	CHERT	IRHYOLITE TUFF	ANDESITE
367	SHALE	ANDESITE	IRHYOLITE TUFF	MAFIC VOLC
368	MAFIC VOLC	MAFIC VOLC	IRHYOLITE	RHYOLITE VOLC FRAG
369	RHYOLITE TUFF	RHYOLITE	RHYOLITE TUFF	ANDESITE
370	BASALT AGGLOMERATE	RHYOLITE TUFF	MAFIC VOLC	DACITE FLOW
371		MAFIC VOLC	ANDESITE FLOW	SEDIMENTS
372		ANDESITE PYROCLASTICS	ANDESITE FLOW	SERPENTINE
373	SHALE	RHYOLITE PYROCLASTICS	GABBRO	ANDESITE
374	BASALT	DIABASE DIKES	BASALT FLOW	SEDIMENTS
375	BASALT FLOW	CHERT	GRAPHITIC SHALE	GRAPHITIC SHALE
376		SELDOM	CALCAREOUS BRECCIA	CALCAREOUS BRECCIA
377		GRAPHITIC SHALE		
378				

## NUM | MINERALS

325	CPY, BOR, CC, CALC, EPID
326	PYR, MAR, CPY, SPH, PO, MAG, CARB
327	PYR, CPY, SPH, CC, CHR, LIM, HEM, QTZ, CALC, CHL, SER
328	PYR, SPH, GAL, CPY, BAR
329	PYR, SPH, CPY, PO, MAG, APPY, GAL, CUB, MOLY, FAH, QTZ, ALB, CHL, CALC, ACT, MUSC, EPID, SAR, BIOT
330	PYR, SPH, CPY, PO
331	PYR, SPH, CPY, PO, GAL, APPY, TETH, CUB, MAG, CC, BOR, MAL, AZUR, GAN, QTZ, SER, CHL, CALC, BIOT, STAIR, HORN
332	PYR, SPH, GAI, CPY
333	PYR, CPY, QTZ, CHL, CARB
334	PYR, SPH, GAL, CPY, ARG, AG, QTZ, CALC, CHL
335	CPY, BOR, MAL, CC, CUP
336	SPH, GAL, PPR, CPY, APY, HES, TETD, CUB, JACK, ELEC, BOUR, PO, AU, BOR, LIM, CHR, MAL, HEM, JAS, CARB
337	PYR, PO, CPY, SPH, GAL, CUB, MACK, VALL, APY, MAG, ILM, RUT, MOLY, TETH, BOUR, AU, AG, SB, QTZ, CARB, BIOT, CHL, MUSC, HORN, KY, FELD, ANHY, SER
338	PYR, MAR, CPY, SPH, PO, GAL, AG, COS, CALV, QTZ, CALC, AP
339	PO, CPY, SPH, MAG
340	CPY, SPH, GAL, MOLY, BAR
341	PYR, PO, CPY, SPH, MAG, QTZ, CALC, TALC, STLP, CHL
342	PYR, CPY, SPH, GAL, TREM
343	SPH, GAL, CPY, PYR, PO, GUD, CUB, MOLY, MAR, FAH
344	PO, PYR, CPY, SPH, APY, GAL, MAR, QTZ, RUT
345	PYR, CPY, SPH, GAL, BAR, GYP
346	PYR, PO, SPH, GAL, CPY, MAG, ILM, TIT, APY, TETH, BOUR, JAM, BOUL, GUD, PYRG, BI, ELEC, STAN, RUT, VALL, HEM, QTZ, SER, CHL, CALC, PLAG, EPID, CHLD, FL
347	PYR, CPY, PO, HEM, MAG, VALL, MAL, CT, CU, QTZ, CALC
348	PYR, SPH, GAL, CPY
349	CPY, PO, PYR, MOLY, SPH, FAH, MAG, QTZ, TOUR
350	PYR, CPY, SPH, GAL, QTZ, CHL
351	PYR, CPY
352	PO, CPY, PYR
353	PYR, CPY, SPH, GAL, APY
354	PYR, CPY, SPH, GAL, PO, ARG, PROU, BOR, QTZ, CHL, ACT, SER, TOUR
355	PYR, PO, SPH, CPY, APY, GAL, MAR, FRB, QTZ, CHL, MUSC
356	PYR, SPH, CPY, BOR, TETH, GAL, AU, CHR, GYP, CU, CC, MAL, AZUR, COV, LIM, JAR, KAOL, QTZ, CALC, BAR, CHL, SER
357	PYR, CPY, SPH, GAL
358	PYR, CPY, CPY
359	PYR, CPY, SPH, GAL
360	SPH, CPY
361	PYR, CPY, SPH, GAL, BAR
362	PO, CPY, PYR
363	PYR, CPY
364	PYR, CPY
365	PYR, CPY, SPH
366	PO, PYR, SPH, CPY
367	SPH, GAL, CPY, PYR
368	SPH, CPY, PYR, PO
369	CPY, SPH
370	PYR, SPH, CPY, GAL, QTZ, SER, CHL
371	PYR, SPH, PO, CPY, GAL, MAG, FAH, AU, AG, CC, COV, BOR, MAR, BAR, QTZ, MICA, TOUR, COR, CALC
372	PYR, CPY, SPH
373	PYR, SPH, GAL, CPY, QTZ, CARB, SER, BAR
374	PYR, CPY, SPH
375	PYR, CPY, SPH, PO, CC, MAL, AZUR, CUP, LIM, HEM, CHR, TENR, CU, QTZ, CHL, CALC
376	PYR, CPY, SPH, PO, MAG
377	CPY, SPH
378	PYR, SPH, CPY, GAL, APY, PO, TETH, BOUL, QTZ, SER, CHL

NUM	DISC	DEPOSIT-AGE	AREA	A	B	C	Ore Types	REFERENCES
325	1971	ORDOVICIAN	0.02	0.31	0.09		MASS	65, 357, 391
326	1958	ARCHEAN	3.5E-04	0.31			MASS, DISS, STR	65, 33, 244, 356, 373
327	1861	JURASSIC	0.15	0.12	0.05		MASS	67, 170, 173
328	1964	ORDOVICIAN	0.51	0.42	2E-03		MASS	65, 92, 189
329	1917	ORDOVICIAN	0.51	0.42			MASS, DISS	53, 299, 431
330	1957	ARCHEAN	12.47	0.37	0.02		MASS, STR	66, 243
331	1925	ORDOVICIAN	0.14	0.08	6E-03		MASS, DISS, STR	36, 133, 287
332	1930	PROTEROZOIC					MASS, DISS	119, 354
333	1970	CRETACEOUS					MASS, DISS	87, 92, 109, 127
334	<1971	PROTEROZOIC					MASS, DISS	47, 90, 262, 381
335	1965	PROTEROZOIC	0.07	0.08	0.05		MASS, STR	251
336	>1890	ORDOVICIAN					MASS	35, 89, 340
337	1925	ARCHEAN	0.28	0.08			MASS	37, 19, 272, 320, 393, 428, 452
338	1958	PALEOZOIC					MASS, DISS	119, 183, 396, 405, 435
339		PERMIAN	2.49E-03				MASS, DISS	126
340							MASS, DISS, STR	34
341	1958	ARCHEAN					MASS, DISS, STR	189, 226, 287, 373
342		ORDOVICIAN					MASS	126
343	1757	PROTEROZOIC					MASS, DISS, STR	187, 196, 352, 427
344	1956	PROTEROZOIC	0.05				MASS	28, 87, 109, 127, 287
345	1955	MIocene					MASS	167, 292
346	<1939	PROTEROZOIC					MASS, DISS	130, 150, 370
347	<1957	CRETACEOUS					MASS, DISS	308
348	1953	ORDOVICIAN					MASS, DISS	65, 92, 354
349	1937	PROTEROZOIC					MASS, BRECCIA	174
350	1768	ORDOVICIAN	2.16	0.46	0.32		MASS, DISS, STR, VEIN	101, 311
351	<1937	EOC PLIO	0.88	0.4	2.7E-03		MASS	419, 454
352	1954	ARCHEAN					MASS	287, 304, 379
353	<1862	CARBONIFEROUS					MASS	56, 161, 402
354	1881	PROTEROZOIC					DISS, MASS	221, 335
355	1974	PROTEROZOIC	0.33	0.2	0.02		MASS	148, 447
356	1861	JURASSIC					MASS, DISS	74, 142, 170, 172, 365
357		DEVONIAN	2.49E-03				MASS	126
358	1954	CRETACEOUS					MASS, STWK	32, 309, 421
359	<1933	CARBONIFEROUS	0.35	0.3	0.03		MASS	168, 230
360	<1973	ARCHEAN	0.27	0.12	0.01		MASS	17, 65
361	1875	ORDOVICIAN	0.31	0.15	0.01		MASS	95, 307, 403
362	1967	PROTEROZOIC					MASS	28, 127
363	<1974	EOC PLIO	0.05	0.03	0.03		MASS	454
364	>1930	CRETACEOUS	0.4	0.3	0.04		MASS, STWK	1, 32, 309, 421
365	1974	ORDOVICIAN	0.4	0.3	0.04		MASS, DISS	354, 403
366	1960	ARCHEAN	0.35	0.3	0.15		MASS, DISS	65
367	1976	DEVONIAN					MASS, DISS, STWK, VEIN	22, 265
368	1945	PROTEROZOIC					MASS	65, 92
369	<1952	ARCHEAN					MASS	92, 247, 356
370	1970	PERMIAN					MASS, DISS, STR	65
371	1958	PROTEROZOIC	0.65	0.6	0.08		MASS, DISS, STR	371, 443, 444
372	>1850	PALeozoic	0.7	0.26	0.03		MASS, DISS, STR	124, 179, 187, 196, 338
373	>1970	CAMBRIAN					MASS, DISS	126
374	1965	ARCHEAN					MASS	383
375	1862	PALeO TRIAS	0.18	0.11	0.02		MASS, DISS, STR	180, 219, 377
376	1959	ARCHEAN					MASS, DISS, STR	65, 287, 373
377	1958	PROTEROZOIC					MASS	65, 27, 128
378	<1950	PROTEROZOIC		0.02			MASS	123, 150, 201, 328

NUM	DEPOSIT NAME	CTRY	LAT	LONG	TORE	CU	ZN	PB	AG	AU
379  RAMBLER-MING	CNNF	495250	560545	4468	76.4	6.26	0	44.23	4.6	
380  RAMSEY	CNSK	54447	1024505	710	14.48	11.36	0	0	0	0
381  RAVLIDEN	SWDN	650300	-182900	888	4.35	36.59	5.77	79	0.27	
382  RAVLIDMYRAN	SWDN	650400	-182800	3878	39.17	133.79	0	209	2.3	
383  ROSEBERY-READ	AUTS	414600	-1453300	17760	122.54	2948.16	905.76	2823.84	59.32	
384  RED WING	CNBC	55250	1295300	181	3.62	0	0	0	0	
385  REED LAKE	CNMN	543813	1003256	1360	28.42	0	0	0	0	
386  RENDALL-JACKSON	CNNF	493448	561100	11	0.38	0	0	0	0	
387  RENSTROM	SWDN	645000	-194000	3630	39.93	286.77	65.34	668	14.5	
388  RIEPPE	NRWY	692000	-214500	3000	15	60	0	0	0	
389  RIO TINTO	SPAN	374214	63551	231200	1757.12	2242.64	994.16	941	50.9	
390  ROCKY TURN	CNNB	473730	660300	255	0.76	17.85	3.82	20.2	0.44	
391  ROD	CNMN	545123	995057	633	33.99	16.33	0	8.67	0.61	
392  RODHAMMEREN	NRWY	625600	-102500	900	2.7	0	0	0	0	
393  RODKILEV	NRWY	592300	-50900	2500	24.25	71.25	0	0	0	
394  ROMANERA	SPAN	374100	71900	1500	5.7	93.15	50.25	174	0	
395  ROMERITO	SPAN	374646	64842	8600	77.4	342.28	163.4	0	0	
396  ROSTVANGEN	NRWY	622300	-102200	400	10.4	4	0	14	0.32	
397  RUDTJEBACKEN	SWDN	652200	-183000	4635	45.42	118.66	0	55.6	0.93	
398  RUA COVE	USAk	602033	1473924	3200	35.2	0	0	0	0	
399  RUTTAN	CNMN	562830	993814	40800	624.24	583.44	0	204	8.16	
400  SABETJOK	NRWY	692000	-210000	15.4	0.25	0	0	0	0	
401  SAGMO	NRWY	670800	-160000	2100	37.8	4.6	0	0	0	
402  SAIN BEL	FRNC	454900	-43600	20000	60	48	3	0	0	
403  SAN ANTONIO	SPAN	374330	63442	27000	432	180.9	81	432	4.59	
404  SAN DOMINGOS	PORT	373946	72800	20000	250	500	0	0	0	
405  SAN GUILLERMO-SIERRA	SPAN	373500	70600	125000	887.5	1662.5	837.5	1500	75	
406  SAN MATEO	PLPN	145500	-1211000	20	0.8	0	0	0	0	
407  SAN PEDRO	SPAN	373100	64700	230	4.02	0	0	0	0	
408  SAN PLATON	SPAN	376600	74116	1500	52.5	0	0	0	0	
409  SAN TELMO	SPAN	374748	65842	11400	171	570	136.8	22.8	0.32	
410  SANTA ROSA	SPAN	373814	64857	500	6.5	0	0	0	0	
411  SCHIST LAKE	CNMN	544411	1014934	1880	79.15	131.6	0	62.42	2.16	
412  SELCO-SCOTT	CNQU	495152	743747	678	3.73	46.85	0	8.81	0.14	
413  SHA	CYPS	345711	-332203	320	1.92	0	0	0	0	
414  SHASTA KING	USCA	404355	1222949	200	5.84	15.22	0	6.83	0.22	
415  SHUNSBY	CNON	474248	823930	2270	27.24	29.06	0	0	0	
416  SIERRECILLA	SPAN	374000	71700	200	3.54	25.2	12.48	26	0	
417  SIIRT MADENKÖY	TRKY	380000	-420000	26000	403	0	0	0	0	
418  SILVER QUEEN	CNBC	540515	1264335	363	2.76	21.78	7.62	99.92	1.13	
419  SKAIDE	NRWY	692000	-210000	22	1.28	0	0	0	0	
420  SKORDVASS	NRWY	643930	-124905	10000	100	150	0	100	1	
421  SKOURIOTISSA	CYPS	350500	-325320	5400	126.9	27	0	372.6	59.4	
422  SOLBEC	CNQU	454900	711030	1935	26.32	71.6	9.1	48.76	0.6	
423  SOTIEL	SPAN	373530	65130	41000	250.1	1558	656	1230	0	
424  SOURDOUGH BAY	CNMN	544548	1013718	289	4.22	4.94	0	0	0	
425  SOUTH DUFFAULT	CNQU	481706	785624	218	2.35	0	0	0	0	
426  SOUTH RUSTY HILL	CNQU	0	0	454	3.63	0	0	0	0	
427  SPENCEVILLE	USCA	390734	1211634	136	6.8	0	0	0	0	
428  SPRUCE POINT	CNMN	543624	1002400	907	18.14	36.28	0	0	0	
429  STALL LAKE	CNMN	545120	995628	6040	265.16	33.22	0	61.25	8.15	
430  STEKENAOKK	SWDN	650000	-1430000	15100	220.46	457.53	800.3	3.77		
431  STIRLING	CNNS	454340	602615	1240	8.93	78.99	17.73	85.56	1.19	
432  STOWELL	USCA	404258	1222834	150	4.5	0	0	5.62	0.17	

NUM	HOST ROCKS: SEQ=2	SEQ=1	SEQ=2	SEQ=3
379	QUARTZITE	CHERT  ANDESITE	RHYOLITE PYROCLASTICS	ANDESITE FLOW
380	SHALE	QTZ KERATOPHYRE TUFF  LIMESTONE	KERATOPHYRE TUFF  QTZ KERATOPHYRE TUFF	DACITE TUFF  DACITE TUFF
381	SHALE	TUFACEOUS SHALE	TUFACEOUS SHALE	SHALE
382	RHYOLITE TUFF	ANDESITE TUFF	ANDESITE TUFF	
383	RHYOLITE TUFF	ANDESITE VOLCANICLASTICS	RHOLITE VOLCANICLASTICS	PILLOW ANDESITE
384	ANDESITE TUFF	RHOLITE VOLCANICLASTICS	IPILLOW ANDESITE	ANDESITE VOLCANICLASTICS
385	ANDESITE VOLCANICLASTICS	QTZ KERATOPHYRE AGGLOMERATE	QTZ KERATOPHYRE AGGLOMERATE	ANDESITE VOLCANICLASTICS
386	CHERT	ANDESITE TUFF	RHOLITE TUFF	DIA BASE DIKES
387	KERATOPHYRE TUFF	RHOLITE TUFF	RHOLITE TUFF	DIA BASE BRECCIA
388	SHALE	GRAPHITIC ARGILLITE	GRAPHITIC ARGILLITE	BASALT FLOW
389	SHALE	RHYOLITE TUFF	RHYOLITE TUFF	BASALT
390	FER CHERT	RHYOLITE TUFF	BASALT	QTZ KERATOPHYRE
391	BASALT	QTZ KERATOPHYRE	RHYOLITE PYROCLASTICS	BASALT FLOW
392	BASALT	RHYOLITE PYROCLASTICS	RHYOLITE PYROCLASTICS	
393		SHALE	SHALE	
394		JASPLILITE	JASPLILITE	
395	BASALT	QTZ KERATOPHYRE TUFF	KERATOPHYRE TUFF	SHALE
396		BASALT BRECCIA	BASALT BRECCIA	DACITE TUFF
397	ANDESITE	CHERT	RHYOLITE VOLCANICLASTICS	PILLOW BASALT
398	BASALT TUFF	RHYOLITE TUFF	RHYOLITE TUFF	
399	RHYOLITE VOLCANICLASTICS	BASALT TUFF	BASALT TUFF	
400	SEDIMENTS	KERATOPHYRE TUFF	QTZ KERATOPHYRE TUFF	
401	GRAPHITIC SHALE	RHYOLITE TUFF	RHYOLITE TUFF	
402		RHYOLITE POR	DIA BASE	
403	SHALE	RHYOLITE TUFF	RHYOLITE TUFF	
404	RHYOLITE TUFF	RHYOLITE TUFF	RHYOLITE TUFF	
405	LIMESTONE	RHYOLITE TUFF	RHYOLITE TUFF	
406		SHALE	SHALE	
407		RHYOLITE TUFF	RHYOLITE TUFF	
408		SHALE	SHALE	
409		RHYOLITE TUFF	RHYOLITE TUFF	
410		SHALE	SHALE	
411	ANDESITE VOLCANICLASTICS	RHYOLITE TUFF	RHYOLITE TUFF	
412		RHYOLITE TUFF	RHYOLITE TUFF	
413		PILLOW BASALT	PILLOW BASALT	
414	RHYOLITE POR	RHYOLITE TUFF	RHYOLITE TUFF	
415	ANDESITE	CHERT	CHERT	
416		QTZ KERATOPHYRE	QTZ KERATOPHYRE	
417	CONGLOMERATE	PILLOW BASALT	PILLOW BASALT	
418		RHYOLITE BRECCIA	RHYOLITE BRECCIA	
419	PILLOW BASALT	RHYOLITE TUFF	RHYOLITE TUFF	
420	CLAYEY TUFF	CHERT	CHERT	
421		RHOLITE AGGLOMERATE	RHOLITE AGGLOMERATE	
422	PEBBLE CONGLOMERATE	SHALE	SHALE	
423	RHYOLITE TUFF	ANDESITE VOLCANICLASTICS	ANDESITE VOLCANICLASTICS	
424	GRAPHITIC ARGILLITE	RHYOLITE CHERTY TUFF	RHYOLITE CHERTY TUFF	
425	ANDESITE FLOW	RHYOLITE CHERTY TUFF	RHYOLITE CHERTY TUFF	
426	ANDESITE FLOW	ANDESITE POR	ANDESITE POR	
427	LIMESTONE	RHYOLITE	RHYOLITE	
428	RHYOLITE VOLC. SEDIMENTS	RHYOLITE	RHYOLITE	
429	QTZ KERATOPHYRE	RHYOLITE VOLCANICLASTICS	RHYOLITE VOLCANICLASTICS	
430		GRAPHITIC SHALE	GRAPHITIC SHALE	
431	RHYOLITE TUFF	SILTSTONE	SILTSTONE	
432	RHYOLITE TUFF	RHYOLITE FLOW	RHYOLITE FLOW	

SEQ=1

SEQ=2

SEQ=3

## NUMI MINERALS

379	PYR,CPY,SPH,BOR,MAG,PO,GAL,HAL,CHL,QTZ,SER
380	PYR,CPY,SPH,PO,COV
381	PYR,SPH,CPY,GAL
382	PYR,SPH,CPY,GAL,PO,QTZ,CHL,TALC
383	PYR,SPH,GAL,CPY,APY,FAH,MAG,PO,HEM,AU,BOUR,MEN,KOB,PYRG,BAR,CHL,QTZ,RHOD,SER,SPHEN,E,ALB,TOUR
384	PYR,PO,CPY,SPH
385	CPY,SPH
386	PYR,CPY,SPH,ALB,EPID,ACT,CHL,QTZ,CALC,CLZ
387	PYR,SPH,CPY,GAL,PO,APY,FAH,PYRG,AU,SER,CHL,QTZ
388	PO,SPH,CPY
389	PYR,CPY,SPH,GAL,BOR,CC,TETH,BOUR,APY,MAR,LUZ,MAG,ULL,BER,COV,LIM,ENG,STAN,PENT,COS,KOB,WIT,EMP,QTZ,SER,CHL,KAOL,SID,BAR,GYP,GR,ZIR
390	PTR,SPH,GAL,CPY
391	CPY,PO,PYR,SPH,PO,GAL,APY,COB
392	CPY,FO,PYR,MAG,ILM,HEM,QTZ,BIOT,CHL,HORN,PLAG,ALB,GAR,MUSC,STAUR,AP,ZIR
393	PYR,SPH,CPY
394	PYR,SPH,GAL,CPY
395	SPH,GAL,PYR,FRB,COV
396	PYR,CPY,PO,SPH,MAG,MOLY,JAS
397	PYR,PO,SPH,CPY
398	PO,CPY,SPH,CUB,QTZ,EPID
399	PYR,SPH,CPY,MAG,IGAL,PO,APY,VALL,CUB,ILM,QTZ,PLAG,CHL,SER,BIOT,TALC,TREM,COR,STAUR,GAR
400	PO,CPY,SPH,MAG,CUB,VALL,QTZ,CHL,BIOT,HORN,CARB
401	PYR,PO,CPY,SPH,GAL,CUB,MACK,VALL,APY,MAG,ILM,RUT,MOLY,TETH,BOUR,AU,AG,SB,QTZ,CARB,BIOT,CHL,MUSC,HORN,KY,FELD,ANHY,SER
402	PYR,CPY,SPH,GAL,QTZ,BAR
403	PYR,SPH,CPY,GAL,APY
404	PYR,SPH,CPY,GAL,PO,APY,COB,HEM,COV,ENG,SOE,QTZ,GYP,JAS
405	PYR,CPY,SPH,GAL
406	PYR,CPY
407	PYR,CPY
408	PYR,CPY,SPH,GAL,APY,MACK,PO,HEM,MAG,ILM,BAR,CARB
409	PYR,SPH,CPY,GAL,APY
410	PYR,CPY,PO,CUB,MACK,STAN,APY,SPH,GAL,BI,BOR,CASS,ILM,COV,ENG,CARB
411	PYR,SPH,CPY,APY,GAL,ENG,SER,CH,CARB
412	PYR,SPH,CPY,GAL
413	PYR,CPY,COV,CU,CC,CUP,BOR,JAS
414	PYR,CPY,SPH,GAL,TETH,CC,LIM,QTZ,SER
415	CPT,PYR,PO,SPH,CH
416	PYR,SPH,GAL,CPY
417	PYR,CPY,MAL,LIM
418	SPH,GAL,CPY,QTZ,RHOD,CHD,BAR
419	PO,CPY,SPH,MAG,CUB,VALL,GAL,MAR,QTZ,CARB
420	PYR,SPH,CPY,MAG,IGAL,APY,TENN,QTZ,CHL,CALC,SER,TALC,ACT
421	PYR,CPY,SPH,PO,MAR,MAG,IDA,TENR,MACK,COV,DIG,BOR,CC,GOE,LIM,HEM,JAR,S,MEL,FIB,AU,AG,QTZ,GYP,ILL,MONT,CHD,BROC,CT
422	PYR,SPH,CPY,GAL
423	PYR,SPH,CPY,CC,APY
424	PO,PYR,SPH,CPY
425	CPY,PYR,SPH
426	CPY
427	PYR,CPY
428	PYR,SPH,CPY,PO
429	PO,PYR,CPY,SPH,MAG,ILM,CARB,TREM
430	PO,FO,SPH,CPY,GAL,MOLY,AP,GAU,FAH,BOUL,JAM,ACN,BOUR,HESS,MAG,ILM,HACK,VALL,COV,BOR,HEM,CUB,QTZ,CALC,CHL,SER,RUT
431	PYR,SPH,CPY,GAL,TENN,DOL,QTZ,SER,TALC,CHL,BAR,ALUN
432	PYR,CPY,SPH,LIM,QTZ





NUM	HOST ROCKS:	SEQ=2	SEQ=1	SEQ=-2	SEQ=-3
433	ARGILLITE	FELSIC VOLC	MAFIC VOLC		
434		RHYOLITE TUFF	GABBRO		
435	RHYOLITE AGGLOMERATE	BASALT FLOW	RHYOLITE TUFF		
436		RHYOLITE POR	GRAYWACKE		
437	RHYOLITE FLOW	DACITE PYROCLASTICS	DACITE FLOW		
438		ANDESITE VOLC SEDIMENTS	ANDESITE		
439		HORN BASALT	HORN BASALT		
440		ANDESITE POR	ANDESITE POR		
441		RHYOLITE POR	RHYOLITE		
442		RHYOLITE POR	RHYOLITE POR		
443	ULTRAMAFIC STILL	SELDOMS	RHYOLITE PYROCLASTICS		
444	MUDSTONE	RHYOLITE PUMICE TUFF	RHYODACITE PYROCLASTICS		
445		DACITE	RHYOLITE PUMICE TUFF		
446		JASPINLITE	RHYOLITE		
447	DACITE TUFF	DACITE TUFF	DACE TUFF		
448		JASPINLITE	DACE TUFF		
449		ANDESITE TUFF	ANDESITE TUFF		
450		RHYOLITE LAPILLI TUFF	RHYOLITE FLOW		
451		RHYODACITE PYROCLASTICS	RHYODACITE TUFF		
452		ANDESITE TUFF	ANDESITE TUFF		
453		DACE TUFF	DACE TUFF		
454	BASALT FLOW	ANDESITE PYROCLASTICS	ANDESITE PYROCLASTICS		
455	FER CHERT	DACITE PYROCLASTICS	DACITE PYROCLASTICS		
456	RHYOLITE FLOW	ARGILLITE	ARGILLITE		
457		DACE FLOW	DACE LAPILLI TUFF		
458		PILLOW BASALT	PILLOW BASALT		
459		RHYOLITE TUFF	QTZ KERATOPHYRE		
460		MAFIC VOLC	MAFIC VOLC		
461	FER CHERT	TUFFACEOUS ARGILLITE	TUFFACEOUS ARGILLITE		
462	ANDESITE FLOW	RHYOLITE AGGLOMERATE	RHYOLITE FLOW		
463		PILLOW BASALT	BASALT FLOW		
464		FELSIC VOLC	FELSIC VOLC		
465	CONGLOMERATE	SANDSTONE	RHYOLITE TUFF BRECCIA		
466		RHYOLITE TUFF	RHYOLITE TUFF BRECCIA		
467	RHYOLITE SANDY TUFF	RHYOLITE BRECCIA	RHYOLITE BRECCIA		
468		RHYOLITE TUFF	RHYOLITE TUFF		
469		RHYOLITE TUFF BRECCIA	RHYOLITE TUFF BRECCIA		
470		RHYOLITE	RHYOLITE		
471	ANDESITE FLOW	RHYOLITE FLOW	RHYOLITE BRECCIA		
472	BASALT FLOW	DACITE POR	DACE TUFF		
473	ARGILLITE	CHERT	PILLOW BASALT		
474	BASALT	RHYOLITE VOLCANICLASTICS	RHYOLITE VOLCANICLASTICS		
475		QTZ FELD POR	RHYOLITE TUFF		
476	PUMICE SEDIMENTS	QTZ KERATOPHYRE TUFF	KERATOPHYRE TUFF		
477		RHYOLITE PUMICE TUFF	RHYOLITE PUMICE TUFF		
478		RHYOLITE TUFF	RHYOLITE TUFF		
479	GRAYWACKE	CONGLOMERATE	BASALT		
480		BASALT FLOW	RHYOLITE		
481	ANDESITE FLOW	RHYOLITE CHERTY TUFF	RHYOLITE BRECCIA		
482	CHERT	CHERTY LIMESTONE	ARGILLITE		
483	BASALT	RHYOLITE TUFF	RHYOLITE TUFF		
484	GRAPHITIC SHALE	JASPINLITE	RHYOLITE TUFF		
485		GRAYWACKE	FEELIC VOLC		
486		ANDESITE FLOW	RHYOLITE FLOW		

## NUM | MINERALS

433	PYR,PO,SPH,CPY,GAL
434	PYR,SPH,GAL,CPY,APY
435	PYR,SPH,CPY,GAL,PO
436	PYR,SPH,CPY,GAL,TETH,AU,PO,QTZ,CHL,SER,ANK,CALC
437	PYR,CPY
438	PYR,PO,CPY,SPH
439	CPY,PTK,PO
440	PYR,SPH,GAL,CPY
441	CPY,BOR,QTZ,CALC
442	PYR,CPY
443	PYR,PO,SPH,CPY,GAL
444	PYR,PO,SPH,CPY
445	SPH,CPY,GAL,QTZ,BAR,KAOL,SER,CHL
446	CPY,SPH
447	PYR,CPY,MAG,SPH,GAL,AU,PAT,ENG,TETH,BAR,CHL,QTZ,FELD,SER,GRAM,CALC
448	PYR,SPH,CPY,GAL,MAG
449	PYR,CPY,SPH,GAL,MAG
450	PYR,CPY,SPH,GAL,BAR
451	PYR,SPH,CPY,GAL
452	PYR,CPY,SPH,GAL,TENN,QTZ,CARB,ALUN,BAR,TALC
453	CPY,SPH,GAL
454	PYR,PO,CPY,CU,CHL
455	PYR,SPH,CPY,GAL,TETH,CC,QTZ
456	PYR,SPH,GAL,CPY
457	PYR,SPH,GAL,CPY,TENN
458	PYR,CPY,MAG,PO,SPH,AU,AG,MILL,APY,CU,SPEC,CHL,QTZ,ANK
459	PYR,PO,SPH,CPY,GAL
460	SPH,CPY,PYR
461	PYR,SPH,GAL,CPY,APY
462	PYR,CPY,SPH,GAL
463	PYR,CPY,CC,BOR,COV,JAS,EPID
464	CPY,SPH,GAL
465	PYR,CPY,SPH,GAL,ENG,LUZ,S,BOR,CC,QTZ,SER,CHL
466	PYR,SPH,CPY,GAL
467	PYR,CPY,SPH,GAL,BAR
468	PYR,SPH,CPY,SPH,QTZ
469	PYR,SPH,CPY,GAL
470	SPH,PYR,APY,CY,PO,GAL,TETH,CHL,QTZ
471	PTR,SPH,CPY,GAL,FAH,APY,BOR,BAR,ANHY,SER,CARB,QTZ,ALB
472	CPY,PYR,SPH,GAL,TETH,BOR,CC,COV,MAL,AZUR,BAR,GYP,QTZ,DOL,ANK
473	PYR,CPY,SPH,HEM,LM,QTZ,JAS
474	MAG,SPH,IIM,ILM,QTZ
475	PYR,SPH,CPY,PO,SPH,IIM,QTZ
476	PYR,SPH,PO,CPY,GAL,CAS,MAG,ARG,TENN,APY,DYS,AG,QTZ,CARB
477	PYR,SPH,MAR,CPY,GAL,ENG,IDA,TENN,COV,BOR,HEM,GOE,MAL,CT,GYP,KAOL,MONT,QTZ,BAR,ANHY,CALC
478	PYR,FO,CPY,SPH,CUB,GAL,APY,BI
479	PYR,CPY,HEM,QTZ,CHL,CALC
480	PYR,FO,CPY,SPH
481	PO,PR,CPY,SPH,MAG,BOR,QTZ,CHL
482	PYR,SPH,GAL,CPY,PO,MAR,QTZ,CARB,CHL,GR
483	PYR,PO,CPY,SPH,MAG,CHL,SER
484	CPY,PYR,PO,SCP
485	PYR,CPY,SPH,PO
486	PYR,MAR,CPY,SPH,PO

NUM	DISC	DEPOSIT-AGE	AREA	A	B	C	ORE TYPES	REFERENCES
433	1886	ARCHEAN		0.18	0.15	0.03	MASS	65,225
434	1956	ORDOVICIAN					MASS	65,92,89,337,354
435	1970	ARCHEAN	7.5E-03				MASS,STR	64,145,163,287,372
436	1863	ORDOVICIAN					MASS,STWK	69,183,337
437	<1971	EOC PLIO					MASS,DISS,STWK	181,454
438	1954	PROTEROZOIC					MASS	28,127
439	1917	EOCENE					MASS	65
440	1964	TRIASSIC					MASS	65
441	1966	ARCHEAN	0.02				STWK	65
442	<1902	DEVONIAN					MASS	211,241
443	1909	CAMB.ORD					MASS,DISS	39
444	1929	ARCHEAN					MASS,DISS	65,102,356
445	1911	MIocene					MASS	406
446	1973	ARCHEAN					MASS	65
447	<1964	PRECAMBRIAN					MASS	31,203,204
448	<1964	PRECAMBRIAN					MASS	203,204,364
449	1880	DEVONIAN					STWK,DISS	126
450	<1867	MIocene	0.02				MASS	167
451		CRETACEOUS					MASS	248
452	1883	PROTEROZOIC	0.01				MASS	65,343
453	1925	TRIASSIC					MASS	65
454	<1862	ORDOVICIAN					MASS	95,114,390
455	1976	ARCHEAN	0.01				MASS,DISS,STR	251,275
456	1955	ORDOVICIAN					MASS	313,337
457	1957	ORDOVICIAN					MASS,STR	65,92,169,189
458	1857	ORDOVICIAN					MASS,DISS,STR	93,95,391,425
459		SILURIAN					DISS	400
460	1941	EOC PLIO					VEIN	422,454
461	1956	ORDOVICIAN					MASS,DISS,STR	189,256
462	1947	ARCHEAN					MASS,DISS	65,442
463	-3000	CRETACEOUS	4.99E-03				MASS,STWK,DISS	32,421
464	1967	ARCHEAN					MASS	17,92,287
465	1900	MIocene	4.99E-03				MASS	253
466	1928	MIocene	0.1				MASS,STWK	253
467	1902	MIocene	4.99E-03				STWK,DISS	72,253
468	1902	MIocene	4.99E-03				MASS	253
469	1900	MIocene	0.06				STWK	253
470	1930	ORDOVICIAN					MASS,DISS	65
471	1923	TRIASSIC					MASS,DISS	63,65,185,385
472	<1971	CRETACEOUS	2E-03				MASS,DISS,STR	60,306
473		JURASSIC					MASS,STR,DISS	219,377
474	1920	ORDOVICIAN	0.03				MASS	119,268,285,431,439
475	1968	ARCHEAN	0.2				MASS,DISS	61,65,287,312,319,369
476	1955	PROTEROZOIC	0.37				MASS,DISS	78
477	1957	PLIOCENE	0.03				MASS	233,431
478	1932	ORDOVICIAN					MASS	91
479	1867	SILURIAN					MASS,DISS	17,92,127,287
480	1928	PROTEROZOIC					MASS,DISS,STR	99,395,396
481	1956	ARCHEAN					MASS	65,119,252,287,413
482	1926	PROTEROZOIC					MASS	116,152
483	1965	ORDOVICIAN					MASS	123,150
484	1973	PROTEROZOIC	0.13				MASS	105,225,287
485	1915	ARCHEAN					MASS	133,183,396,405,435
486	1925	ARCHEAN					MASS	

NUM	DEPOSIT NAME	CTRY	LAT	LONG	TORE	CU	ZN	PB	AG	AU
487	WALLAROO	AUWA	-3400000	-1344500	3800	125.4	0	5.82	24.75	0
488	WEDGE	CNFB	472350	660330	1456	34.94	25.48	0	0.5	0.5
489	WEEDON	CNQU	454225	712225	1601	25.94	12.33	0	8.68	0.34
490	WEISS	TRKY	362200	-394000	1814	57.68	8.71	0	33.38	4.72
491	WEST McDONALD	CNQU	481932	785712	3930	0.55	169.78	0	87.64	3.58
492	WESTARM	CNMN	543833	1015014	1230	49.2	21.89	0	19.68	1.56
493	WHALEBACK-LITTLEDEE	CNIF	493530	560330	4890	51.35	0	0	0	0
494	WHITE CREEK	AUWA	-205050	-1174940	2790	55.8	13.11	0	0	0
495	WHITE LAKE	CNIN	544248	1014312	628	12.62	29.7	0	19.4	0.43
496	WHUNDO	AUWA	-210450	-1165530	2060	45.73	25.96	0	0	0
497	WILDCAT	PLPN	160000	-1200000	600	18.6	0	0	0	0
498	WILLECHO	CNON	491045	855330	3192	18.19	95.76	6.06	175.56	0.22
499	WIM	CNMN	550131	1000238	989	28.78	0	0	8.11	1.69
500	WINDY	CNBC	594400	1374500	9070	90.7	0	0	0	0
501	WOODLAWN	AUQL	-350600	-1493400	11000	194.7	1027.4	389.4	858	0
502	YAVA	CNT	653610	1075600	1130	6.78	56.5	19.21	154.81	0.38
503	YOICHI	JAPN	430240	-1404600	740	5.18	25.9	7.4	37	0.96
504	YOKOTA(MOTOYAMA-HAMA	JAPN	373055	-1392713	7990	86.29	196.55	46.34	367.54	0.8
505	YORK HARBOUR	CNIF	490208	561805	243	5.83	17.01	0	0	0
506	YOSHINO(HISAKA)	JAPN	380900	-1402408	960	9.6	38.4	0	57.6	0.96
507	YOSHINO(MAIN)	JAPN	380900	-1401129	4750	63.18	200.45	0	285	9.93
508	YTTERDEN	NRWY	634700	-110700	500	10	0	0	0	0
509	Z	CNMN	564945	1010130	139	1.54	3.46	0	0	0.08

NUM	HOST ROCKS:	SEQ=2	SEQ=1	SEQ=-1	SEQ=-2	SEQ=-3
487	RHYOLITE POR					
488		SEDIMENTS	RHYOLITE TUFF		RHYOLITE TUFF	DACITE BRECCIA
489	MUDSTONE		RHYOLITE		ANDESITE TUFF	
490			TUFFACEOUS MUDSTONE		RHYOLITE PYROCLASTICS	DIABASE BRECCIA
491	VOLC SEDIMENTS			RHYOLITE PYROCLASTICS		
492			BASALT FLOW		RHYOLITE VOLC SEDIMENTS	RHYOLITE VOLCANICLASTICS
493	SILTSTONE				PILLOW BASALT	DIABASE DIKES
494			SLATE		SLATE	RHYOLITE PYROCLASTICS
495	ANDESITE FLOW					RHYOLITE BRECCIA
496			RHYOLITE POR			
497	LIMESTONE		RHYOLITE		BASALT	
498	ARGL SANDSTONE		TUFF		RHYOLITE TUFF BRECCIA	DACITE FLOW
499	SEDIMENTS		MAFIC TUFF		MAFIC TUFF	ARGL SANDSTONE
500	GRAYWACKE		ANDESITE		ANDESITE	SEDIMENTS
501	ANDESITE FLOW		CHERT		BASALT PYROCLASTICS	BASALT FLOW
502			SHALE		TUFFACEOUS SHALE	RHYOLITE TUFF
503			RHYOLITE FLOW		DACITE TUFF	
504	RHYOLITE PYROCLASTICS		DACITE FLOW		DACITE FLOW	
505	SEDIMENTS		MUDSTONE		RHYOLITE FLOW	
506				RHYOLITE BRECCIA	PILLOW BASALT	GABBRO
507	RHYOLITE TUFF		IMUDSTONE		IMUDSTONE	SANDSTONE
508			IMUDSTONE		IMUDSTONE	SANDSTONE
509	SEDIMENTS		BASALT		BASALT	
			ANDESITE		ANDESITE	SEDIMENTS

NUM	MINERALS
487	CPY, PYR, PO
488	PYR, CPY, SPH, GAL, TENN
489	PYR, CPY, PO, SPH, GAL, MAR
490	PYR, CPY, MAG, PO, SPH, GAL, MAR, DIG, COV, VALL, BOR, CUB, AU, ILM, CHL, QTZ, CALC, BAR, RUT, ANAT
491	PYR, SPH, CPY, PO, GAL
492	PYR, CPY, SPH
493	PYR, CPY, PO, SPH, MACK, CUB, PENT, GAL, MAG, ILM, MAR, GOE, COV, CHL, QTZ, SPHEENE, MUSC, EPID, ALB
494	PYR, PO, CPY, SPH, GAL, MAG, APY, MAL, AZUR, CUP, CHR, CT, CU, BOR, DIG, CC, COV, QTZ, CHL, RUT, SPHEENE, EPID
495	PO, PYR, SPH, CPY, GAL, APY, QTZ
496	PO, PYR, CPY, SPH, MAR, APY, MAG, MAL, AZUR, CUP, CC, NEO, COV, CU, CHL
497	PYR, CPY
498	PYR, PO, CPY, MAG, SPH, GAL, ARG, AG, QTZ
499	PYR, PO, CPY, SPH
500	CPY, PYR, PO
501	PYR, SPH, GAL, CPY, FAH, APY, PO, STAN, LIM, GOE, CER, MAL, AZUR, CUP, CHR, CC, COV, DIG, HEM, BEU, BAR, TALC, CHL, QTZ, KAOL
502	SPH, PYR, GAL, CPY, PY, TENN
503	SPH, GAL, CPY, PYR, BAR
504	CPY, PYR, SPH, GAL, HEM, BAR, QTZ, CHL, GYP
505	PYR, SPH, CPY, PO, GAL, MAL, LIM, CHL, CALC, QTZ, RUT, BAR
506	PYR, SPH, CPY, GAL, MAR, ELEC, IDA, STRM, BOR, CC, COV, HEM, BAR, CLAY, QTZ
507	PYR, SPH, CPY, GAL, TETH, ENG, ELEC, BOR, COV, CC, BAR, CHL, MONT
508	PYR, CPY
509	CPY, SPH

NUM	DISC	DEPOSIT-AGE	AREA	A	B	C	ORE TYPES	REFERENCES
487	<1860	PROTEROZOIC					DISS, STWK	229, 255
488	1956	ORDOVICIAN		0.37	0.15	0.05	MASS	92, 96, 189
489	1908	ORDOVICIAN		0.35	0.17	0.02	MASS	92, 257, 287, 337, 360
490	1970	EOCENE		0.15	0.1	4E-03	MASS, DISS	149, 183, 248, 300
491	1923	ARCHEAN					MASS	65, 119, 133, 287, 396
492	1973	PROTEROZOIC					MASS	109, 127
493	<1878	ORDOVICIAN	7.5E-03				MASS, DISS, STR	23, 65, 199, 246
494	1888	ARCHEAN					MASS, DISS	251, 327
495	1963	PROTEROZOIC					DISS, MASS, STR	109, 127, 287
496	1912	ARCHEAN					MASS	251, 327
497	<1970	EOC PLIO					MASS	49, 454
498	1954	ARCHEAN					MASS, DISS	287, 413, 416
499	1968	PROTEROZOIC					MASS	65, 127
500	1960	PERMIAN					MASS	65
501	1967	SILURIAN					MASS, STWK	135, 157, 249, 250, 344, 345
502	1972	ARCHEAN		0.42	0.3	0.04	MASS, STR	65, 125
503	1910	MIocene		0.3	0.05	0.02	MASS, STWK	290
504	1910	MIocene		0.24			MASS, STWK	175
505	<1897	ORDOVICIAN		0.09			MASS, DISS, STR	65, 100, 122
506		MIocene		0.16	0.1	0.02	MASS, STWK	295
507	1951	MIocene		0.03			MASS, STWK	295
508	1861	ORDOVICIAN		0.32	0.08	0.008	MASS	39
509	1947	PROTEROZOIC					MASS	65

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